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ORIGINAL COMMUNICATIONS.

THE BACILLUS TUBERCULOSIS AND THE ETIOLOGY OF TUBERCULOSIS.—IS CONSUMPTION CONTAGIOUS?

SECOND COMMUNICATION.

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V.—THE BACILLUS TUBERCULOSIS—ITS NATURAL HISTORY, MORPHOLOGY, DETECTION, HABITAT, SIGNIFICANCE, AND DIAGNOSTIC VALUE.

I WILL now speak about the bacillus proper, and will allude here briefly to its natural history, morphology, habitat, significance, detection, and diagnostic value.

The bacillus discovered by Koch, of Berlin, as is well known, is a vegetable organism, and belongs, according to Cohn's classification, to the group of filamentous bacteria (Desmo-bacteria), variety Bacillus.*

The tubercle-bacilli form, according to Koch, a species of bacillus by themselves, and on Koch's authority as a *mycologist* we can accept this statement as correct until proved otherwise.

The tubercle-bacilli present themselves as thin, slender rods, in length varying from one-third to the whole of the diameter of a human red blood-corpuscle; in breadth they do not exceed one-fifth to one-tenth of their length. They vary in size in different locations, and, according to observations made by myself conjointly with George Bodamer, my assistant, they vary also greatly in size in different artificial culture-media. In nearly dry soils they appear, as a rule, much smaller than in moist soils. They are blunt at the ends, and frequently contain unstained spores in varying number which give them a beaded appearance that might be (and has been) mistaken for short torula chains of micrococci. The rods are sometimes slightly curved, and they frequently appear in pairs, forming a V-shaped figure; occasionally the rods are seen crossing one another. Often they appear within animal cells in tissues and other matters which they invade, quite isolated and scanty, so that there may be seen only a few bacilli, or only one bacillus, in a whole microscopic field. Sometimes they occur in large, dense masses, particularly so and most commonly within and around cheesy masses in lymph-glands, and in the cheesy fragments met with in the contents of lung-cavities, as Koch himself first pointed out.

It may be of interest to note that tubercle-bacilli may considerably multiply in sputum when it stands in a bottle for some time, as first observed by Bodamer in my laboratory. Williams, of the Brompton Hospital for Consumptives, records also that he has seen the bacilli multiply in sputum after standing in a warm room for ten days.

For demonstrative purposes it is well to inspissate tuberculous sputum or to dry it (as I have seen in Koch's laboratory); for examination it is then moistened with water, and it will then show more bacilli than when fresh.

The methods of detecting the bacillus are so well known that I will not consider in this communication the merits of the different dyes employed. Moreover, success does not depend upon the method or the dye, but mainly upon the skill and the accuracy of the dyer.†

As is generally known, the principle in staining bacilli rests upon the fact that bacteria absorb and retain aniline dyes more readily than do the surrounding animal organic materials which they inhabit. When sputum dried upon a glass cover, or a section containing them, is well stained, for instance, by aniline violet, and then washed in very dilute nitric acid, only the bacilli will retain the dye, while all the rest of the organic material composing the specimen will be decolorized, and may readily be stained by some other dye without modifying the violet color of the bacilli.‡

*The statements made by Beneke, Klebs, and Schmidt, that the bacilli are crystalline bodies, have been withdrawn; while views to the effect that "bacilli" are to be identified with blood-fibrin, etc., were at no time taken into serious consideration by microscopists.

†To detect bacilli is a very simple matter, although by far not so easy as to prepare a specimen of urine and to find the all-important tube-casts; and yet how many physicians (even those perfectly familiar with microscopic technology) will be sure when they discover tube-casts, if they attempt to examine the urine at all?

‡The staining fluids for bacilli we more commonly use are those after Ehrlich's formula, slightly modified:

First Stain.—Watery saturated solution of aniline oil, *five*

A magnifying power of four hundred diameters is nearly always sufficient to detect stained tubercle-bacilli. In fact, we found that where we failed to find bacilli with a good one-fifth objective, neither our one-twelfth Zeiss oil immersion lens nor the Abbé's condenser would reveal any when used (as we always do) for control. If the bacilli are very numerous (as sometimes in lymphatic glands), a mass of them may be recognized easily by the naked eye in a well-stained section as a small stained speck.

Occasionally bacilli may also be seen when unstained. Baumgarten* discovered the same tubercle-bacillus simultaneously with, and independently of, Koch, in unstained caustic potash preparations of tubercle-tissues. Koch† also states that tubercle-bacilli may be readily seen, especially in artificial tubercles when simply teased in water, or preferably in blood-serum. We have also observed tubercle-bacilli, without resorting to staining, in cultures such as chicken *bouillon*, identifying them subsequently by means of the usual staining process. In stained preparations too much washed in acid, or in specimens ill preserved, a part or all of the tubercle-bacilli may also be seen decolorized, though still quite distinctly visible.

Tubercle-bacilli are, as a rule, motionless as seen in stained preparations made from the substances they inhabit; but the observations of Bodamer and myself appear to show that the bacilli of Koch may also have an actual (not communicated) motion when for some time cultivated in liquid media. But at the same time it was observed that the development of the cultures was not as extensive in liquid media (*bouillon*) as in a solid medium (coagulated blood-serum). Conversing with Koch on this point last summer, he remarked that this was quite possible, and suggested that perhaps the bacilli in their movable state acquire flagelli or cilia at the ends, although he had not yet made such observation. Koch, quite properly, does not seem to consider that motion is an invariably differentiating feature for bacteria.

In cultures (coagulated blood-serum being the preferable nidus) the tubercle-bacilli grow as a dry, scaly, tortuous, whitish-gray mass, spreading themselves exclusively on the surface. The growth is very slow, and is favored by a temperature of 30° to 40° C. (86° to 104° F.).

Dr. Koch kindly demonstrated to me a number of specimens of bacilli, and in particular the appearance of these bacteria exhibiting under low amplification the peculiar S-like figure in the growths in masses. Koch seems now to lay more stress upon this low-power appearance and upon the pathogenetic properties of the bacillus tuberculosis, as a distinguishing feature from other bacilli, than upon the color test. During the conversation he admitted that some other bacilli may also yield the same micro-chemical reaction as the tubercle-bacilli, but insisted that the latter bacilli cannot be stained brown. The failure of the tubercle-bacilli to take the brown stain, he said, was the reason that they cannot be well photographed (blue- and red-stained objects not being suitable for photographing). He obligingly explained to me the details of his methods and the determination of the value of cultures. I learned from him that those cultures in which the bacilli have no spores are not capable of propagation, nor are they fit for inoculation of animals.

Klebs, to whom Koch had given some of his cultures of tubercle-bacilli, declared that they also contained micrococci. Koch presumes that Klebs has misinterpreted the granules of the coagulated blood-serum (in which they grew) as micrococci. I can testify that bacilli alone were present in those cultures of Koch which I had the opportunity of examining. This is also true of a bacillus-culture in a flat salt-dish obtained from Koch's laboratory by Dr. Shakespeare of this city; this culture was still perfectly pure (and free) as micrococci) when examined by Dr. Shakespeare and myself, three months after the arrival in America.

Concerning my own bacillus-cultures

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parts: alcoholic saturated solution of aniline violet, *one part:* mix and filter.

Second Stain.—Watery solution either of vesuvin or of Bismarck brown; filtered.

Direction for Preparation and Order of Staining.—Sputum in thin layer smeared upon glass cover and *well* dried; immerse (*a*) into first stain for twenty-four hours (rapid staining being not reliable in doubtful cases); (*b*) into dilute nitric acid (one to five parts of water) for two or three seconds; (*c*) wash in alcohol; (*d*) into second stain for two to five minutes; (*e*) wash in water and then in alcohol; (*f*) dry it and mount in Canada balsam or glycerin. Failures to detect bacilli will occur: first, when specimen consists of salivary mucus instead of expectorated material; second, when sputum too thick or too thin is smeared upon cover; third, when not enough heated in drying, or when burned; fourth, when too long in acid; fifth, when too much washed; sixth, when bacilli are absent; seventh, when not recognizing them.

For preparations to be kept, and for tissues, the fuchsine dye, as first stain, is preferable, and certain modifications of method necessary.

*Med. Centralblatt, 1882, No. 15.

†Berliner Klin. Wochenschr., 1882, No. 15.

which I recommenced last autumn (and which are now more often successful than before I went to Berlin, through the use of the complete outfit of Koch's apparatus, supplied by the University of Pennsylvania) I will report later. But it may be said that, even under the most favorable conditions, to obtain success with the tubercle-bacillus culture is at times a difficult task.

Before leaving this part of the subject I must say that I owe many thanks to the director of the German Imperial Board of Health, Dr. Struck, and to Dr. Koch and his assistants, for the very liberal and kind treatment which they extended to me in their laboratory; also for allowing me to study the whole working of their famous institute, and demonstrating to me their methods of work, including the construction of their ingenious apparatus, and permitting me to exercise all the important manipulations in bacteridian studies after Koch's method; and, furthermore, for allowing me to prove that I had succeeded also in staining and recognizing the tubercle-bacillus before I went to them.

I cannot blame Koch for not demonstrating to me how to produce genuine induced tuberculosis with his bacillus within eight days, a favor which he extended only to Watson Cheyne;* not because I have not yet the "faith" in the infallible action of the tubercle-parasite, but because Koch was then working at the subject himself, and does not consider the task as much finished as his over-zealous followers do. I was, moreover, informed, while in his laboratory before leaving Berlin, that no one besides himself and his assistants ever worked in the laboratory on the tubercle-bacillus beyond staining tissues, sputa, etc., containing it. Besides, the cultivation of the tubercle-bacillus takes a longer time than usually is allowed to outsiders who come to be instructed in Koch's laboratory.†

The Habitat of the Tubercle-Bacillus.—After reading most of the numerous compilations in reference to the present standing of the tuberculosis question, it would seem that Koch has established that his tubercle-bacillus is always associated with tuberculosis, and with the diseased products and the various excreta in this disease,—and in this disease alone. Since Koch's publication appeared, a number of observers, authoritatively and otherwise, assert the invariable presence of the bacillus in *all* tubercular products; and, further, it is claimed as a proved matter that the bacillus is found in the beginning of the disease,—viz., in the youngest tubercle-tissues.

This is, however, not in accordance with the facts. Neither in Koch's own publication nor in the records of any microscopist (when the original papers are examined) is the invariable presence of the bacillus in tubercular lesions or excretions and its absence in non-tubercular matters either clearly shown or proved. Moreover, the authors of nearly all the literary productions are in favor of the contagiousness of tuberculosis, and they disregard, as a rule, the negative evidence.

The question of the occurrence, and partly that of the significance, of the bacillus called by Koch the *tubercle-bacillus* in tubercular lesions divides itself into several parts, and hinges upon the results of the following investigations:

1. The examination of tissues affected by tubercular disease for the bacillus; and, if present, the time of its occurrence.

2. The examination, *intra vitam*, of blood of tubercular patients.

3. The examination of the products discharged or eliminated with the excretions by individuals suffering from tubercular disease.

4. The examination of air,—viz., of the breath of phthisical patients, and of the air of sick-rooms and hospitals generally.

5. Comparative studies in animal tuberculosis.

6. The occurrence of bacilli in lesions and substances other than tubercular.

I will state now, briefly, what so far have been the results of the investigations upon these points.

1. Tubercle-bacilli have been detected

* See Practitioner, April, 1883, page 249.

† I found that the "pilgrims from all nations" who (through influence brought to bear upon the authorities) succeed in being admitted for a while to Koch's laboratory, are instructed principally in the most rudimentary manipulations of mycology; and to most of them the assistants have first to point out what a bacterium looks like. Besides these "pilgrims," the German Government sends regularly young sanitary officers to be instructed in mycology. Of course this is a very useful matter to the "pilgrims" and to the young sanitary officers, even if only one out of twenty-five ever devotes himself to mycology; but it is no beneficial matter to Koch and his kind assistants, who, through this constant interruption, are terribly interfered with in their scientific work. In fact, the working of the Imperial Laboratory is sometimes completely delayed in this way, as it was last summer, during the Hygienic Exhibition. Yet the beneficial influence upon sanitary science which this excellent institution exerts is very great.

quite often in the various forms of tubercles of lung, and in scrofulous and tuberculous lymphatic glands; and likewise, although not so frequently, in tubercles of the various serous cavities; and in tubercular ulcerations of the mucous membranes and the skin. But it must be noted that only a few microscopists have recorded examinations of tubercle-tissues for bacilli, and among these there was *not one* who did not meet with a case or a certain number of cases in which tubercle-bacilli were either totally absent in the tissues or only present in some of the tubercles. The great bulk of bacillus work done comprises merely examinations of sputum.

The facts concerning bacilli in tissues are as follows:

Koch* found bacilli in the majority of tuberculous lesions he examined, but still not in all, as he states himself: he only *supposes* that his bacilli, even if they escape observation, are still present in all cases and in all tubercles. His proposition, however, that in some tuberculous lesions only unstained spores of tubercle-bacilli are sometimes present, or that bacilli may be invisible, and not taking the staining when dead, or even may be absent if the tuberculous process comes to a "standstill," is, of course, purely hypothetical. There is still another good reason for the assumption that the proportion of non-bacillary tubercles may be much larger in Koch's own examinations. As Koch says himself, he pre-eminently recognizes only such structures as tubercular which contain his bacillus, regardless of their morphology otherwise: it is therefore possible that he may have innocently excluded a number of non-bacillary tubercles from the list of his tubercle records. Koch himself, however, says that he failed to detect bacilli in some scrofulous glands and in two cases of tubercular synovitis, and further admits the prevalence of bacilli in degenerated tissues.

As far as examination of tubercle-*tissues* for bacilli is concerned, only the following observations besides those of Koch are recorded (so far as is known to the writer), and with the following results:

Dr. Geo. M. Sternberg, U.S.A.,† who is a man recognized as a competent mycologist, here as well as in Europe, failed to find tubercle-bacilli in the lesions of several cases of tuberculosis.

Heneage Gibbs‡ also failed to discover bacilli in a number of tubercles, particularly in the reticular form: in fact, he had met several times with non-bacillary tuberculosis. Gibbs states§ that "he had examined the lungs of guinea-pigs which had become tuberculous after being kept in the air-shafts of the Brompton Hospital for Consumptives, and had found no bacilli in them; and he knew of an instance in which a guinea-pig, inoculated with sputum from a case of phthisis, presented a glandular abscess in the thigh which abounded in bacilli, whereas the internal organs, although full of tubercles, did not yield a single bacillus."

I do not think it likely that Heneage Gibbs, with his large experience and universally-recognized skill in bacteria-stainings, would fail to discover bacilli if they had been present.

Watson Cheyne,‖ whose anatomical conception of tubercle is inseparable from the bacillus, of course says that non-bacillary tubercles, like the above, are no tubercles at all. Hence his statement, that in all tuberculous structures (that is, in all structures which *he* calls tubercle) the bacilli are invariably present, is, from his standpoint, perfectly warrantable. He also confirms the fact that recently-formed tubercle-nodules made up of young lymphoid cells are, as a rule, without the bacilli, while the older tubercles always containing epithelioid cells (on account of retrograde changes) usually do contain bacilli. Now, Watson Cheyne, in this connection, with great self-confidence propounds, "The bacilli being the cause of this disease [tuberculosis], only the nodules containing epithelioid cells are tubercle."¶ Still, the same writer has expressed surprise** that "very extensive tuberculous processes may be found in animals with only very few bacilli."

T. M. Prudden, of New York,†† who made extensive and excellent morphological studies in reference to the occurrence of the bacillus in tuberculous lesions, *failed to find bacilli in any part of the body in three cases of profuse tuberculosis*. In one case of Prudden's the tubercle-bacilli were

* Berliner Klin. Wochenschr., No. 15, 1882.
† Phila. Med. News, 1882.

‡ London Lancet, February 24, 1883.
§ Lancet, February 12, 1883.
‖ Practitioner, April, 1883.
¶ See p. 309, loc. cit. ** Page 316.
†† Medical Record, April 14, and ibid., June 16, 1883.

abundant in the walls and edges of a lung-cavity and its immediate vicinity, while no bacilli could be found in the diffuse and miliary tubercles of the rest of the body. Prudden further states, "In a large proportion of the cases in which bacilli were present they seemed to have a decided predilection for tubercle-tissue in a degenerated and disintegrating condition, either cavities in the lungs, cheesy and breaking-down areas, or tubercular ulcers; although present with great frequency in small numbers in well-formed, intact tubercle-tissue. . . The bacilli were present in greater abundance in the respiratory organs and intestinal tract than in other parts of the body less directly in communication with the external world. It is further evident that in nearly every case there are many miliary tubercles of all forms, and in many cases much diffuse tubercle-tissue from which the bacilli appear to be entirely absent."

Spina* did not succeed in detecting bacilli in a number of cases. Even if the number of Spina's failures to see the bacillus should be larger than in cases of other observers, Koch's favorite demolishing argument that Spina and all others who failed to detect the bacillus in any case do not know *what* that parasite of his looks like, is entirely unjustifiable. Moreover, Spina's work was controlled by no less an authority than Stricker, of Vienna, and the correctness of the results of the investigation in its essential parts is vouched for by Stricker.

Cornil and Babès† detected the bacillus in the lesions of a number of cases of tuberculosis; but they also showed that bacilli are totally absent in some cases, and not constant in otherwise typical tuberculous lesions.

Malassez and Vingal,‡ from the results of observations of their own, state that there seems to be no doubt that true tuberculous lesions occur which possess very few or even no tubercle-bacilli.

Fräntzel,§ in a discussion before the Berlin Medical Society, stated that he found a number of scrofulous (tuberculous) ulcers and lymph-glands not to be "bacillary."

C. Macnamara‖ reports a case of primary tuberculosis of bone and of the marrow of bone, in which no trace of tubercle-bacilli could be discovered in any of the lesions.

George Bodamer, having succeeded in staining and demonstrating the bacillus in sputum and in tissues in the spring of 1882 (immediately after the announcement of its discovery and the method of its staining by Koch, and probably prior to any one else in America), and having worked together with me nearly incessantly in bacillus stainings and cultures ever since (including also a certain time in the pathological institutes in Germany), also failed to detect the bacillus in a certain number of typical tuberculous lesions of various kinds.

As will be seen from my report, I found tubercle-bacilli to be absent (or I could not detect them, if this expression should be preferred) in four cases of primary peritoneal tuberculosis, in two cases of primary tubercular pericarditis, in one case of tubercular joint-disease, and in several cases of miliary tuberculosis: this does not include some cases of induced animal tuberculosis which did not show bacilli.¶

Dr. Lawrason, of New Orleans, who worked with me last spring in the pathological laboratory of the University, and who had demonstrated his skill in staining bacilli in tissues before the Pathological Society of Philadelphia and elsewhere, also found tubercle-bacilli wanting in some of the most typical tuberculous lesions.

Weigert, Bollinger, Baumgarten, Ziel, Councilman Schuchart, and Krause, and Koch's own assistants, are yet to be mentioned as having recorded a few examinations of tuberculous tissues for bacilli with negative and varying results; but detailed statements of their investigations in this direction are not known to me.

The direct conclusion to be drawn from the total evidence relating to bacilli in *tissues* just quoted is, that tubercle-bacilli are not invariably present in even typical tuberculous lesions; furthermore, that none of the investigators brought forward any proof or evidence that the bacilli are present or appear in the beginning of the disease. On the contrary, the results of the investigations of all observers, including

* Studien über Tuberculose, Wien, 1883.
† Le Progrès Médical, 1883.
‡ Le Progrès Médical, No. 20, 1883, and in a second communication quoted by the Lancet, December 15, 1883.
§ Berliner Klin. Wochenschr., December, 1883.
‖ Brit. Med. Journal, December 15, 1883.

¶ At this point I wish to correct an impression which a certain statement in one of my former communications on this subject seemed to convey,—namely, that bacilli are invariably present in tuberculous products.

those of the discoverer of the bacillus himself, point plainly towards establishing the fact that tubercle-bacilli inhabit pre-eminently disintegrated tissues.

2. *Examinations of the blood and lymph intra vitam* of patients suffering from tubercular disease, which in my opinion would be quite an important matter in the study of tuberculosis, are not recorded by any observer. All attempts which we made in examining the blood of tuberculous patients during life gave, as will be recorded later, negative results. It is true that we observed in specimens post mortem some blood-vessels filled with thrombi containing a few bacilli. Further, there are records by Cornil, Weigert, Ponfick, and Koch relating to bacilli observed post mortem in the walls of veins, of large lymph-ducts, and of arteries, in tuberculous cases. As to the route and manner by which the bacilli gained entrance to these places inferences might be drawn, but no definite conclusions arrived at until the bacilli have been observed during life in the blood or lymph. I will not touch upon this part of the question at present.

The blood from cases of hæmoptysis as expectorated has been examined by Hiller * and Williams † and bacilli discovered, but no inference from this can be made as to the bacilli in the circulating blood.

3. *Examination of products discharged or eliminated with the excretions* by individuals suffering from tuberculosis has been practised quite extensively and by a number of observers especially in reference to phthisical sputum. To these sputum-examinations I will return immediately.

There are a few investigations recorded in reference to tubercle-bacilli in the fæces, in discharges from the ears and in those from the nose, and in urine voided by patients affected with local tuberculosis of the pertaining parts. Tubercle-bacilli were often detected, and thus a diagnosis of tubercular enteritis, tubercular otitis, and tubercular meningitis (if bacilli in nasal discharge) and tuberculosis of the urinary tract, was made.

The tuberculous nature of ulcers, of synovitis, and of surgical lesions of various locations, it is claimed has been occasionally settled (?) in this way.‡ But, on the other hand, the discharges from some typical tuberculous lesions failed to show bacilli.

Damsch § claims that tuberculosis of the genito-urinary tract can be diagnosticated by inoculating a drop of urine from such a case into the anterior chamber of the eye of a rabbit, which operation will be followed promptly by iris tuberculosis in the animal. This latter observation, however, I believe, requires confirmation.

The examinations of sputum, practised now probably by all microscopists in the world, proved to be of much more value. I will quote the observers who made and recorded more or less extensive examinations of sputum, and the results and conclusion they arrived at, to show that there are some points which are misinterpreted by some clinicians and others.

Koch ‖ does not claim that sputum from every phthisical case contains bacilli: he met with cases without bacilli in sputum. He did not find, however, bacilli in cases said not to be tubercular.

Ehrlich ¶ records twenty-six cases of phthisis in which bacilli were invariably present in the sputum; in other lung-affections similar bacilli were not found.

Balmer and Fräntzel ** examined one hundred and twenty cases of phthisis for bacilli with positive results, and came to the conclusion that the quantity of bacilli was in direct proportion to the gravity of the disease, and that the bacilli were larger and often contained spores in acute cases, and were smaller in size and quantity in chronic cases. They never saw bacilli in the sputum of cases other than phthisis. They also quite properly conclude "that the sputum affords to bacilli a more favorable place of growth than does the still living lung-tissue," because they found bacilli to be extremely scanty in the tuberculized lung-tissue surrounding a cavity, while the contents of the latter and cheesy degenerated parts of the lung were crowded by them.

Heron †† records sixty-two cases of examination of phthisical sputum, in which bacilli were constantly present.

D'Espine ‡‡ records examination of sputum from twenty-five cases, but could not

* Deutsche Med. Wochenschr., No. 47, 1882.
† London Lancet, February 24, 1883.
‡ Schuchart and Krause, in Volkmann's Clinic, Chirurg. Centralblatt, 1883.

§ Deutsch. Arch. f. Klin. Med., 1882.
‖ Loc. cit.
¶ Deutsche Med. Wochenschr., No. 19, 1882.
** Berliner Klin. Wochenschr., No. 45, 1882.
†† London Lancet, February 2, 1883.
‡‡ Ibid., January 13, 1883.

confirm the correctness of the assumption that the bacilli stand in any relation of quantity to the gravity of the disease, although he affirms that they are constantly present.

Williams,* having examined the sputum of one hundred and thirty cases for bacilli, with only three negative results, concludes, however, that there was "no definite ratio between the activity of the disease and the number of bacilli, although they were few in cases where the disease was quiescent."

Kowalsky† claims to have examined the sputum of six hundred cases of phthisis, with bacilli nearly invariably present.

Chiari,‡ in a number of cases examined, never failed to find bacilli.

Detwiler and Meissen § examined eighty-seven cases of phthisis, finding bacilli in all but two. Although bacilli were more numerous wherever great destruction of lung-tissue existed, they did not observe any definite ratio of bacilli in sputum to the gravity of the disease. The presence of elastic tissue in sputum they consider as significant for diagnosis and as constant as that of bacilli.

S. West‖ found bacilli present in every case of phthisis which he examined, though in some cases they were in such small numbers as only to be found after repeated and very careful examination. He further adds, "The more cheesy matter or fluid from a cavity there was in the expectoration, the more bacilli we might expect to find; consequently, in a case of acute tuberculosis, before breaking down of the lung, we should expect to find none." He also states that there seemed to be but little variation in the size of the individual bacilli in different cases, although bacilli in acute cases appeared to contain spores.

R. S. Smith¶ records seventy-seven cases in which he had made the examination of sputum: of these, forty-nine were from "tubercular phthisis," and invariably showed bacilli; the remaining twenty-eight, comprising various other affections of lungs, some of them closely simulating phthisis, did not show bacilli. The affections examined with negative results were such as "chronic bronchitis, bronchiectasis, chronic syphilitic pneumonia, slight hæmoptysis with no evidence of any disease, chronic pleuro-pneumonia with dulness on percussion and copious purulent expectoration, chronic pleurisy, apex pneumonia with subsequent breaking down from gangrene and with cavity (?), sarcoma of lung, gray hepatization, congestion from mitral disease, diabetes with bronchitis, two cases with strong family history of phthisis, cough with purulent expectoration, but with no evidence of local disease in lungs," etc. Bacilli were also wanting in "slight phthisical cases when the patients were rapidly recovering." I think, however, that errors in physical diagnosis can by no means be fully excluded here.

Heneage Gibbs,** from his extensive observations, states that the sputum did not show bacilli in some cases which upon the autopsy-table showed the lungs riddled with tubercular masses: he explains that the patient died before the destructive process had gone far enough to cause the bacilli to be ejected.

Whipham†† records twenty cases which he studied in relation to bacilli in sputum, and made the observation that the bacilli disappear from sputum at times when the condition of the patient improved.

The report upon the examinations of sputum for bacilli from the pathological laboratory of the University of Pennsylvania will embrace the results from nearly two hundred cases of pulmonary diseases observed. These show that bacilli in sputum are diagnostic, but not prognostic, in phthisis; that the old-fashioned test, the presence of pulmonary elastic tissue in sputum, is a very reliable one (gangrene and abscess being so easily excluded); and, further, that the absence of tubercle-bacilli in sputum proves nothing.

Spina and Stricker‡‡ met tubercle-bacilli in simple bronchiectasis, bronchitis, croupous pneumonia, etc.

Sattler, in the translation of Spina's book,§§ page 164, adds the record of an autopsy of a case of similar nature mistaken for phthisis on account of bacilli in sputum.

Kundrat‖‖ related a case which occurred

* London Lancet, February 24, 1883.
† Wien. Med. Presse, February 24, 1883.
‡ Ibid., No. 1, 1883.
§ Berliner Klin. Wochenschr., Nos. 7 and 8, 1883.
‖ London Lancet, February 10, 1883.
¶ British Med.-Chirurg. Journal, July, 1883.

** London Lancet, February 24, 1883.
†† Ibid., February 10, 1883.
‡‡ Loc. cit.
§§ Cincinnati, 1883.
‖‖ Discussion before the Vienna Medical Society, Wiener Med. Presse, 1883.

in the spring in Nothnagel's clinic, where a diagnosis of tuberculosis was based upon the detection of bacilli; but, post mortem, the case proved to be one of chronic catarrh with bronchiectasis. He also mentioned a case, under Prof. Schrötter, where bacilli were repeatedly found by himself and others, and the necropsy showed only bronchitis and emphysema. Hence he was not disposed to admit that the discovery of bacilli in the sputum was absolutely diagnostic of tubercle.

Riegel, of Giessen, and others, failed to find bacilli in the sputum of cases of diabetic phthisis. But I think the diabetes had nothing to do with keeping the bacilli out, as I have detected multitudes of bacilli in the sputum from a case of diabetic phthisis observed and confirmed by autopsy by Dr. Charles H. Reed, of this city.

Levinsky* and Koryanyi† both detected tubercle-bacilli in the sputum of patients with syphilitic lesions of the lung.

It is very probable that many of the cases of pulmonary disease in which bacilli were not discovered might nevertheless have been phthisical: in fact, the character of the control cases, as given by R. S. Smith (quoted above), fully justifies such assumption. From the autopsy-experience of clinicians and pathologists whom I consulted, and from observations of my own, I can testify that the only sure way to decide the nature of doubtful cases, such as, for instance, those recorded by Smith, is the autopsy; otherwise the negative evidence in relation to bacilli goes for naught. This is also substantiated by the observations of Gibbs, Whipham, and West, quoted above, —viz., that bacilli may fail to appear in sputum where there are no cavities and no ulceration in the lung. I have seen autopsies reveal phthisis in cases where no bacilli were found during life, after careful examination over and over again repeated; and I also happened to witness the autopsies of three cases of non-tubercular lung disease which during life had been diagnosticated phthisis on account of bacilli discovered in the sputum.

The examination of sputum may thus, in doubtful cases, be quite misleading; for, if in any given case bacilli are not found, it should be taken into consideration, *first*, that the bacilli may be enclosed in the tubercle-tissue, as in miliary tubercle, which rarely produces destruction of the lungs, and consequently they may fail to appear in the sputum, and, *second*, that the examiner may fail occasionally in any case to succeed in preparing a successful preparation of stained bacilli. On the other hand, if bacilli are present, they sometimes may not be pertaining to the case, but be accidentally introduced through use of a vessel uncleansed and used by another patient, or otherwise; and, finally, it may be inferred, but it is by no means proved under rules of scientific scrutiny, that similar bacilli do not occur in the sputum of cases other than tubercular.

From our present knowledge of the occurrence of Koch's bacillus in sputum we must therefore conclude:

1st. That the presence of bacilli is a valuable *diagnostic sign* of tubercular disease of the lung.

2d. That the quantity of bacilli found does not, as a rule, indicate the degree of the disease, and hence is *not a prognostic sign*.

3d. That the absence of tubercle-bacilli is *no proof whatsoever of the absence* of tubercular disease.

4th. *The examination of air*—viz., *of the breath of patients* suffering with pulmonary tuberculosis, and of the air of sick-rooms and hospitals generally—has given some positive, although not definite, results.

C. Theodore Williams‡ "recently selected one of the ventilation-shafts at the Brompton Hospital for Consumptives in which the flues of several wards converge, and in which extraction takes place at the rate of three hundred to four hundred feet a minute. In this current he suspended glass plates smeared with glycerin for a period of five days. The plates were then washed with distilled water, the fluid mixed with a little mucilage and evaporated down to half, and the residue tested for bacilli, which were found in fair abundance."

R. C. Smith§ "succeeded in demonstrating bacilli in the breath of consumptive patients by making them breathe through two thin sheets of gun-cotton placed in the outer compartment of an ordinary respirator. This layer of cotton is then converted into collodion, run in thin films on slides, and stained for bacilli."

* Deutsche Med. Wochenschr., No. 11, 1883.
† London Medical Record, March 15, 1883.
‡ Quoted from the London Lancet, July 28, 1883.
§ British Medical Journal, January 20, 1883.

A. Ransome,* on examining the breath of several advanced cases of phthisis, found specimens of bacillus in two cases, while in several other cases the organism was not found, and it was not found in the aqueous vapor condensed in the waiting-room of the Manchester Consumption Hospital. The collections had been made by exposing cover-glasses smeared with fresh white of eggs or a little mucus for a certain length of time. Gibbs's method was used in staining.

Celli and Guarneiri † made similar examinations with quite different results. They were unable, after the most careful search, to find tubercle-bacilli in the air of an unventilated room in which phthisical patients had been sleeping. The expired breath of those patients was likewise found to be entirely free from bacterial contamination. Nor could the tubercle-bacilli be discovered in air which had been passed through the sputa of tuberculous patients, although in every case the expectorations were found to contain them in large numbers. (They were also unsuccessful in attempts at inoculation with fluids impregnated with this presumably vitiated atmosphere.)

Profs. Sarmoni and Marchiafava ‡ examined the breath of a number of phthisical patients for bacilli, with absolutely negative results. (They conclude that phthisis is not directly contagious, but might be indirectly so by means of dried, powdered sputum, which floats as dust in the air.)

V. Wehde § made, under direction of Bollinger, in Munich, the following experiments in relation to examination of air. Plates smeared with glycerin were exposed for forty-eight hours in closed rooms in which there were a number of advanced acute cases of phthisis. No bacilli could be found after applying the usual tests in the appropriate manner. (He further testifies that after injecting the material collected, as above stated, into the peritoneal cavity of eleven rabbits and guinea-pigs, no tuberculosis was produced.)

5. *Comparative studies of animal tuberculosis.*—Spontaneous animal tuberculosis is unquestionably identical with human tuberculosis. There are a few morphological specializations, which I mentioned in a former chapter,—*e.g.*, in tuberculosis of birds and in bovine tuberculosis or pearl-disease; but the essential, peculiar histological features are the same in all. Tubercle-bacilli appear also to be present in nearly all cases of spontaneous animal tuberculosis. I detected bacilli in a tuberculous bronchial lymph-gland from a phthisical tiger, which I had kept in alcohol for eight years, and in one from a monkey of more recent date; and several times I found bacilli in spontaneous bovine, chicken, rabbit, and guinea-pig tuberculosis. I also studied tuberculosis in the bear, lion, leopard, and in a large variety of apes (dead of typical consumption, from the Zoological Garden), with results identical with those obtained from studies in man. But this was long before the "outbreak" of the "bacillary campaign," and consequently Koch's parasite was not looked for in these latter cases.

Bollinger ‖ found bacilli in the udder of a cow affected by pearl-disease (bovine tuberculosis).

There are no observations on record concerning the occurrence of tubercle-bacilli in the excretions and the manure of animals affected by tuberculosis (sputum is not produced by animals),—not even any reliable observation of bacilli in the milk.

Artificial or induced tuberculosis in animals will be considered in connection with the experiments farther on.

6. *The occurrence of bacilli in lesions and substances other than tubercular.*—Bacilli not distinguishable from tubercle-bacilli are met with in lupus and leprosy. The bacillus met with in lupus is unquestionably identical with the tubercle-bacillus, as is evident from the investigations of Max Schüller, Pfeiffer,¶ Dontrelpont,** and Babès and Cornil.†† Yet the dermatologists are hardly inclined to recognize lupus and tubercle as inseparable, there being already a defined tuberculous lesion (the scrofuloderm) on the dermatological list, and, further, they refuse to identify the two lesions on clinical and anatomical grounds.

The bacillus of leprosy, in specimens which I had the opportunity to examine, appears to me also perfectly identical with the small forms of tubercle-bacilli; although the lepra-bacillus may perhaps look more

* British Medical Journal, December 16, 1882.
† Quoted by the New York Record from the Gazzetta degli Ospitali, No. 56, 1883.
‡ Annali Universali di Medicina, September, 1883.
§ Prager Med. Wochenschr., January, 1884.
‖ Centralblatt f. d. Med. Wiss., August 18, 1883.
¶ Deutsche Med. Wochenschr., No. 19, 1883.
** Monatsheft f. Praktische Dermatologie, No. 6, 1883.
†† Loc. cit.

sharp-pointed to the eyes of others and may fail to take the brown stain. There is nothing surprising in the fact that the same species of bacillus inhabiting soils of different character and different chemical composition, perhaps, may acquire varying micro-chemical properties and slight modification in shape. The experiments of Damsch* further suggest the identity of leprous- and tubercle-bacilli in their effects. There is no reason to believe that leprosy is a variety of tuberculosis, yet we must either declare lupus, leprosy, and tubercle to be identical lesions, or else declare the tubercle-bacillus not to be peculiar to tuberculosis.

I observed bacilli not distinguishable by the shape and micro-chemical tests from tubercle-bacilli in the false membranes in two cases of diphtheria and in one case of scarlet fever with extensive pseudo-membranous angina. Two of these cases proved fatal; the autopsies did not reveal tuberculosis in any part of the body. The false membrane was prepared by crushing it between two cover-glasses, and was treated like sputum.

In syphilis of the lung the cheesy material and the sputum (as above stated) were found to contain tubercle-bacilli by Levinsky,† and also by Koryanyi.‡

Lichtheim § and Craemer ‖ may be mentioned yet in this connection as having each found the tubercle-bacilli, or bacilli like them in every respect, in the fæces of a number of non-tuberculous patients, as well as in the tuberculous. This is, however, energetically contradicted by Gaffky, of Koch's laboratory, on the ground that he (Gaffky) failed to discover in fæces of normal persons in Berlin any bacilli which reacted to micro-chemical tests like tubercle-bacilli.

The discovery of Professor Bologh¶ that bacilli similar to tubercle-bacilli are found in the marshes around Pesth, Koch also tries to demolish by the statement that such bacilli were not detected in the mud of a Berlin city canal.

In sections of phthisical lungs I often observed masses of bacilli in those portions which were without tubercles, but which were affected secondarily by simple acute inflammatory changes and the air-vesicles merely stuffed with exudate undergoing rapid disintegration (coagulation necrosis); while the real tubercle-tissue contained no bacilli, or sometimes only a few in the giant cells. I think Prudden** also noted this.

Surveying now the whole question of the habitat of the bacillus tuberculosis, it becomes evident that Koch's dogma—that only that is tuberculosis, and everything is tuberculosis, where his bacillus is found—is overdrawn and cannot bear criticism. It would be much safer to reverse this proposition, and to *consider only that bacillus a tubercle-bacillus which inhabits evident tubercular lesions* or their products,—*e.g.*, sputum, and nothing else. For we have no difficulty in diagnosticating under the microscope a tubercle without the bacillus; but *a dilemma arises at once if we see questionable bacilli without the tubercle, or outside of sputum.*

(To be continued.)

* Centralblatt f. d. Med. Wiss., July 21, 1883.
† Loc. cit. ‡ Loc. cit.
§ Fortschritte der Med., vol. i., 1883.
‖ Sitzungsbericht der Societät in Erlangen, December 11, 1882.
¶ Wiener Med. Wochenschr., No. 51, 1882.

CLINICAL ASPECTS OF CEREBRAL SYPHILIS.

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(Continued from p. 426.)

THE most satisfactory way of approaching this subject is, however, to study the important symptoms in severalty, rather than to attempt to group them so as to make typical, recognizable varieties of the disease; and this method I shall here adopt.

Headache is the most constant and usually the earliest symptom of meningeal syphilis; but it may be absent, especially when the lesion is located in the reflexions of the meninges, which dip into the ventricles, or when the basal gumma is small and not surrounded with much inflammation. The length of time it may continue without the development of other distinct symptoms is remarkable. In one case (Book Y, p. 88, 1879), at the University Dispensary, the patient affirmed that he had had it for four years before other causes of complaint appeared. It sometimes disappears when other manifestations develop. It varies almost indefinitely in its

** Loc. cit.

type, but is, except in very rare cases at least, so far paroxysmal as to be subject to pronounced exacerbations. In most instances it is entirely paroxysmal; and a curious circumstance is, that very often these paroxysms may occur only at long intervals. Such distant paroxysms are usually very severe, and are often accompanied by dizziness, sick stomach, partial unconsciousness, or even by more marked congestive symptoms. The pain may seem to fill the whole cranium, or may be located in a cerebral region, or fixed in a very limited spot. Heubner asserts that when this headache can be localized it is generally made distinctly worse by pressure at certain points; but my own experience is hardly in accord with this. Any such soreness plainly cannot directly depend upon the cerebral lesion, but must be a reflex phenomenon, or due to a neuritis. According to my own experience, localized soreness indicates an affection of the bone or of its periosteum. In many cases, especially when the headache is persistent, there are distinct nocturnal exacerbations.

It will be seen that there is nothing absolutely characteristic in the headache of cerebral syphilis; but excessive persistency, apparent causelessness, and a tendency to nocturnal exacerbation should in any cephalalgia excite suspicion of a specific origin, a suspicion which is always to be increased by the occurrence of slight spells of giddiness, or by delirious mental wandering accompanying the paroxysms of pain. When an acute inflammatory attack supervenes upon a specific meningeal disease, it is usually ushered in by a headache of intolerable severity.

When the headache in any case is habitually very constant and severe, the disease is probably in the dura mater or periosteum; and this probability is much increased if the pain be local and augmented by firm, hard pressure upon the skull over the seat of the pain.

Disorders of Sleep.—There are two antagonistic disorders of sleep, either of which may occur in cerebral syphilis, but which have only been present in a small proportion of the cases that I have seen. Insomnia is more apt to be troublesome in the prodromic than in the later stages, and is only of significance when combined with other more characteristic symptoms. A peculiar somnolence is of much more determinate import. This may occur in non-specific lepto-meningitis, and in states of altered brain-nutrition from senile or other degenerations of the walls of the cerebral vessels, and is therefore not pathognomonic of cerebral syphilis, yet of all the single phenomena of the latter disease it is the most characteristic. Its absence is of no import in the theory of an individual case.

As I have seen it, it occurs in two forms. In the one variety the patient sits all day long or lies in bed in a state of semi-stupor, indifferent to everything, but capable of being aroused, answering questions slowly, imperfectly, and without complaint, but in an instant dropping off again into his quietude. In the other variety the sufferer may still be able to work, but often falls asleep while at his tasks, and especially towards evening has an irresistible desire to slumber, which leads him to pass, it may be, half of his time in sleep. This state of partial sleep may precede that of the more continuous stupor, or may pass off when an attack of hemiplegia seems to divert the symptoms. The mental phenomena in the more severe cases of somnolency are peculiar. The patient can be aroused; indeed, in many instances he exists in a state of torpor rather than of sleep; when stirred up he thinks with extreme slowness, and may appear to have a form of aphasia; yet at intervals he may be endowed with a peculiar automatic activity, especially at night. Getting out of bed; wandering aimlessly and seemingly without knowledge of where he is, and unable to find his own bed; passing his excretions in a corner of the room, or in other similar place, not because he is unable to control his bladder and bowels, but because he believes that he is in the proper place for such act,—he seems a restless automaton rather than a man.

Apathy and indifference are the characteristics of this state, and yet the patient will sometimes show excessive irritability when aroused, and will at other periods complain bitterly of pain in his head, or will groan as though suffering severely in the midst of his stupor, at a time, too, when he is not able to recognize the seat of the pain. I have seen a man with a vacant apathetic face, almost complete aphasia, persistent heaviness and stupor, arouse himself when the stir in the ward told him that the attending physician was present, and come forward in a dazed, highly pa-

thetic manner, by signs and broken utterance begging for something to relieve his head. Heubner speaks of cases in which the irritability was such that the patient fought vigorously when aroused: this I have not seen.

This somnolent condition may last many weeks. Dr. T. Buzzard (*Clinical Lectures on Diseases of the Nervous System*, London, 1882) details the case of a man who, after a specific hemiplegia, lay silent and somnolent for a month, and yet finally recovered so completely as to win a rowing-match on the Thames.

In its excessive development, syphilitic stupor puts on the symptoms of advanced brain-softening, to which it is indeed often due. Of the two cases with fatal result of which I have notes, one at the autopsy was found to have symmetrical purulent breaking down of the anterior cerebral lobes; the other, softening of the right frontal and temporal lobes, due to the pressure of a gummatous tumor, and ending in a fatal apoplexy.

This close connection with cerebral softening explains the clinical fact that apoplectic hemorrhage is very apt to end the life in these cases of somnolent syphilis. Dr. Buzzard's case, given above, and others which might be cited prove, however, that a prolonged deep stupor in persons suffering from cerebral syphilis does not prove the existence of extensive brain-softening, and is not incompatible with subsequent complete recovery. As an element of prognosis, it is of serious but not of fatal import.

Paralysis. — When it is remembered that a syphilitic exudation may appear at almost any position in the brain, that spots of encephalic softening are a not rare result of the infection, and that syphilitic disease is a common cause of cerebral hemorrhage, it is plain that a specific palsy may be of any conceivable variety, and affect either the sensory, motor, or intellectual sphere. The mode of onset is as various as the character of the palsy. The attack may be instantaneous, sudden, or gradual. The gradual development of the syphilitic gumma would lead us, *a priori*, to expect an equally gradual development of the palsy; but experience shows that in a large proportion of the cases the palsy develops suddenly, with or without the occurrence of an apoplectic or epileptic fit. Under these circumstances it will be usually noted that the resulting palsy is incomplete; in rare instances it may be at its worst when the patient awakes from the apoplectic seizure, but mostly it progressively increases for a few hours and then becomes stationary. These sudden partial palsies probably result from an intense congestion around the seat of disease, or from stoppage of the circulation in the same locality; but, whatever their mechanism may be, it is important to distinguish them from palsies which are due to hemorrhage. I believe this can usually be done by noting the degree of paralysis.

A suddenly-developed, *complete* hemiplegia or other paralysis may be considered as in all probability either hemorrhagic or produced by a thrombus so large that the results will be disorganization of the brain-substance and a future no more hopeful than that of a clot. On the other hand, an *incomplete* palsy may be rationally believed to be due to pressure or other removable cause, and this belief is much strengthened by a gradual development. The bearing of these facts upon prognosis it is scarcely necessary to point out.

Although the gummata may develop at almost any point, they especially affect the base of the brain, and are prone to involve the nerves which issue from it. Morbid exudations not tubercular or syphilitic are very rare in this region. Hence a rapidly but not abruptly appearing strabismus, ptosis, dilated pupil, or any paralytic eye symptom in the adult is usually of syphilitic nature. Syphilitic facial palsy is not so frequent, whilst paralyses of the nerve from rheumatic and other inflammation within its bony canal are very common. Paralysis of the facial may therefore be specific, but it is of no diagnostic value. Since syphilitic palsies about the head are in most instances due to pressure upon the nerve-trunks, the electrical reactions of degeneration are present in the affected muscles.

There is one peculiarity about specific palsies which has already been alluded to as frequently present,—namely, a temporary, transient, fugitive, varying character and seat. Thus, an arm may be weak to-day, strong to-morrow, and the next day feeble again, or the recovered arm may retain its power and a leg fail in its stead. These transient palsies are much more apt to involve large than small brain-territories.

The explanation of their largeness, fugitiveness, and incompleteness is that they are not directly due to clots or other structural changes, but to congestions of the brain-tissues in the neighborhood of gummatous exudations. It is easily seen why a squint will remain when the accompanying monoplegia disappears.

Motor palsies are more frequent than sensory affections in syphilis, but hemianæsthesia, localized anæsthetic tracts, indeed any form of sensory paralysis, may occur. Numbness, formications, all varieties of paræsthesia, are frequently felt in the face, body, or extremities. Violent peripheral neuralgic pains are rare, and generally when present denote neuritis. Prof. Huguenin, however, reports (*Schweiz. Corr. Blatt*, 1875) a case in which a severe trigeminal anæsthesia dolorosa had existed during life as the only cerebral symptom, and, death occurring from lung-disease, a small gumma was found on the sella turcica pressing upon the Gasserian ganglion.

The special senses are liable to suffer from the invasion of their territories by cerebral syphilis, and the resulting palsies follow courses and have clinical histories parallel to those of the motor sphere. The onset may be sudden or gradual, the result temporary or permanent. Dr. Charles Mauriac (*loc. cit.*, p. 31) reports a case in which the patient was frequently seized with sudden attacks of severe frontal pain and complete blindness, lasting from a quarter to half an hour; at other times the same patient had spells of aphasia lasting only for one or two minutes. In a case still under my care, with unmistakable signs of cerebral syphilis, the man was suddenly and unaccountably seized with complete deafness, which after some days disappeared in the course of a few hours. Like other syphilitic palsies, therefore, paralyses of special senses may come on suddenly or gradually, and may occur paroxysmally.

Among the palsies of cerebral syphilis must be ranked aphasia. An examination of recorded cases shows that it is subject to vagaries and laws similar to those connected with other specific cerebral palsies. It is usually a symptom of advanced disease, but may certainly develop as one of the first evidences of cerebral syphilis.

Coming on after an apoplectic or epileptic fit, it may be complete or incomplete: owing to the smallness of the centre involved and the ease with which its function is held in abeyance, a total loss of word-thought is not so decisive as to the existence of cerebral hemorrhage as is a total motor palsy. Like hemiplegia or monoplegia, specific aphasia is sometimes transitory and paroxysmal. Dr. Buzzard (*loc. cit.*, p. 81) records several such cases. Dr. Charles Mauriac (*Aphasie et Hémiplégie droite syphilitique*, Paris, 1877) details a very curious case in which a patient, after long suffering from headache, was seized by sudden loss of power in the right hand and fingers, lasting about ten minutes only, but recurring many times a day. After this had continued some time, the paroxysms became more completely paralytic and were accompanied by loss of power of finding words, the height of the crises in the palsy and aphasia being simultaneously reached. For a whole month these attacks occurred five or six times a day, without other symptoms except headache, and then the patient became persistently paralytic and aphasic, but finally recovered.

To describe the different forms of specific aphasia and their mechanism of production would be to enter upon a discussion of aphasia itself, a discussion out of place here. Suffice it to say that every conceivable form of the disorder may be induced by syphilis.

Owing to the centres of speech being situated in the cortical portion of the brain, aphasia in cerebral syphilis is very frequently associated with epilepsy. Of course, right-sided palsy and aphasia are united in syphilitic as in other disorders. If, however, the statistics given by M. Tanowsky (*L'Aphasie syphilitique*) be reliable, syphilitic aphasia is associated with left-sided hemiplegia in a most extraordinarily large proportion. Thus, in fifty-three cases collected by M. Tanowsky, eighteen times was there right-sided hemiplegia, and fourteen times left-sided hemiplegia, the other cases being not at all hemiplegic. Judging from the autopsy on a case reported in Mauriac's brochure, this concurrence of left-sided paralysis and aphasia depends partly upon the great frequency of multiple brain-lesions in syphilis, and partly upon the habitual involvement of large territories of the gray matter secondarily to diseased membrane. An important practical deduction is that

the conjoint existence of left hemiplegia and aphasia is almost diagnostic of cerebral syphilis.

Probably among the palsies may be considered the disturbances of the renal functions, which are rarely met with in cerebral syphilis, and which are probably usually dependent upon the specific exudation pressing upon the vaso-motor centres in the medulla. Fournier speaks of having notes of six cases in which polyuria, with its accompaniment, polydipsia, was present, and details a case in which the specific growth was found in the floor of the fourth ventricle. Cases have been reported in which true saccharine diabetes has been present (consult Servantié, *Des Rapports du Diabète et de la Syphilis*, Paris Thèse, 1876); and I can add to these an observation of my own. The symptoms, which occurred in a man of middle age with a distinct specific history, were headache, nearly complete hemiplegia, and mental failure, associated with the passage of comparatively small quantities of a urine so highly saccharine as to be really a syrup. Under the influence of the iodide of potassium, the sugar in a few weeks disappeared from the urine.

Epilepsy.—Epileptic attacks are a very common symptom of meningeal syphilis, and are of great diagnostic value. The occurrence in an adult of an epileptic attack, or of an apoplectic fit, or of a hemiplegia after a history of intense and protracted headache, should always excite grave suspicion.

Before I read Prof. Fournier's work on Nervous Syphilis, I taught that an epilepsy appearing after thirty years of age was very rarely, if ever, essential epilepsy, and, unless alcoholism, uræmic poison, or other adequate cause could be found, was in nine cases out of ten specific; and I therefore quote with satisfaction Prof. Fournier's words: "L'épilepsie vraie ne fait jamais son premier début à l'âge adulte, à l'âge mûr. Si un homme adulte, au-dessus de 30, 35, à 40 ans, vient à être pris pour la première fois d'une crise épileptique, et cela dans le cours d'une bonne santé apparente, il y a, je vous répète, huit ou neuf chances sur dix pour que cette épilepsie soit d'origine syphilitique."

Syphilitic epilepsy may occur either in the form of *petit mal* or of the *haut mal*, and in either case may take on the exact characters and sequence of phenomena which belong to the so-called idiopathic or essential epilepsy. The momentary loss of consciousness of *petit mal* will usually, however, be found to be associated with attacks in which, although voluntary power is suspended, memory recalls what has happened during the paroxysm,—attacks, therefore, which simulate those of hysteria and may lead to an error of diagnosis.

Even in the fully-developed type of the convulsions the aura is only rarely present. Its absence is not, however, of diagnostic value, because it is frequently not present in true essential epilepsy, and it may be pronounced in specific disease. It is said that when in an individual case the aura has once appeared, the same type or form of approach of the convulsion is thereafter rigidly adhered to. The aura is sometimes bizarre: a severe pain in the foot, a localized cramp, a peculiar sensation, indescribable and unreal in its feeling, may be the first warning of the attack.

In many, perhaps most, cases of specific convulsions, instead of a paroxysm of essential epilepsy being closely simulated, the movements are in the onset, or, more rarely, throughout the paroxysm, unilateral; indeed, they may be confined to one extremity. This restriction of movement has been held to be almost characteristic of syphilitic epilepsy; but it is not so. Whatever diagnostic significance such restriction of the convulsion has is simply to indicate that the fit is due to a cortical organic lesion of some kind. Tumors, scleroses, and other organic lesions of the brain-cortex are as prone to cause unilateral or monoplegic epilepsy when they are not specific as when they are due to syphilis.

Sometimes an epilepsy dependent upon a specific lesion implicating the brain-cortex may be replaced by a spasm which is more or less local and is not attended with any loss of consciousness. Thus, in a case now convalescent in the University Hospital, a man, aged about 35, offered a history of repeated epileptic convulsions, but at the time of his entrance into the hospital, instead of epileptic attacks, there was a painless tic. The spasms, which were clonic and occurred very many times a day,—sometimes every five minutes,—were very violent and mostly confined to the left facial nerve distribution. The trigeminus was never affected, but in the

severer paroxysms the left hypoglossal and spinal accessory nerves were profoundly implicated in all their branches. Once fatal asphyxia from recurrent laryngeal spasm of the glottis was apparently averted only by the free inhalation of the nitrite of amyl. The sole other symptom was headache; but the specific history was clear and the effect of anti-syphilitic remedies rapid and pronounced.

Psychical Symptoms.—As already stated, apathy, somnolence, loss of memory, and general mental failure are the most frequent and characteristic mental symptoms of meningeal syphilis; but, as will be shown in the next chapter, syphilis is able to produce almost any form of insanity, and therefore mania, melancholia, erotic mania, delirium of grandeur, etc., may develop along with the ordinary manifestation of cerebral syphilis, or may come on during an attack which has hitherto produced only the usual symptoms. Without attempting any exhaustive citation of cases, the following may be alluded to:

Dr. A. Erlenmeyer reports (*Die luetischen Psychosen*) a case in which an attack of violent headache and vomiting was followed by paralysis of the right arm and paresis of the left leg, with some mental depression; a little later the patient suddenly became very cheerful, and shortly afterwards manifested very distinctly delirium of grandeur, with failure of memory. Dr. Batty Tuke reports (*Journal of Mental Science*, January, 1874, p. 560) a case in which, with aphasia, muscular wasting, strabismus, and various palsies, there were delusions and hallucinations.

In the same journal, April, 1869, Dr. S. D. Williams reports a case in which there were paroxysmal violent attacks of frontal headache. The woman was very dirty in her habits, only ate when fed, and existed in a state of hypochondriacal melancholy.

M. Leidesdorf details a case with headache, partial hemiplegia, great psychical disturbance, irritability, change of character, marked delirium of grandeur, epileptic attacks, and finally dementia, eventually cured with iodide of potassium. (*Medizin. Jahrbücher*, xx., 1864, p. 114.) Several cases illustrating different forms of insanity are reported by Dr. N. Manssurow. (*Die Tertiäre Syphilis*, Wien, 1877.)

That the attacks of syphilitic insanity, like the palsies of syphilis, may at times be temporary and fugitive, is shown by a curious case reported by Dr. H. Hayes Newington (*Journal of Mental Science*, xix. 555), in which, along with headache, failure of memory, and ptosis in a syphilitic person, there was a brief paroxysm of noisy insanity.

DISEASES OF BRAIN-SUBSTANCE.

The psychical symptoms which are produced by syphilis are often very pronounced in cases in which the paralysis, headache, epilepsy, and other palpable manifestations show the presence of gross brain-lesions. In the study of syphilitic disease of the brain-membranes, sufficient has been said in regard to these psychical disturbances; but the problem which now offers itself for solution is as to the existence or non-existence of syphilitic insanity,—*i.e.*, of an insanity produced by specific contagion without the obvious presence of gummatous disease of the brain-membranes. Very few alienists recognize the existence of a distinct affection entitled to be called syphilitic insanity, and there are some that deny that insanity is ever directly caused by syphilis. It is certain that insanity often occurs in the syphilitic, but syphilis is abundantly joined with alcoholism, poverty, mental distress, physical ruin, and various depressing emotions and conditions which are well known to be active exciting causes of mental disorder. It may well be that syphilis is in such way an indirect cause of an insanity which under the circumstances could not be properly styled syphilitic.

If there be disease of the brain-cortex produced directly by syphilis, of course such disease must give rise to mental disorders, and, if the lesion be situated in such a way as to affect the psychic and avoid the motor regions of the brain, it will produce mental disorder without paralysis,—*i.e.*, a true insanity: again, if such brain-disease be wide-spread, involving the whole cortex, it will cause a progressive mental disorder, accompanied by a gradual loss of power in all parts of the body and ending in dementia with general paralysis; or, in other words, it will produce an affection more or less closely resembling the so-called general paralysis of the insane, or dementia paralytica.

A man having syphilis may also have a disease which is not directly due to the syphilis, and when a syphilitic person has

any disorder there is only one positive way of determining how far said disorder is specific,—namely, by studying its amenability to anti-syphilitic treatment. In approaching the question whether a lesion found after death is specific or not, of course such a therapeutic test as that just given is inapplicable. We can only study as to the coexistence of the lesion in consideration with other lesions known to be specific. Such coexistence of course does not absolutely prove the specific nature of a nutritive change, but renders such nature exceedingly probable.

What has just been said foreshadows the method in which the subject in hand is to be here examined, and the present chapter naturally divides itself into two sections: the first considering the coexistence of anatomical alterations occurring in the cerebral substance with syphilitic affections of the brain-membranes or blood-vessels, the second being a clinical study of syphilitic insanity.

In looking over literature I have found the following cases in which a cerebral sclerotic affection coincided with a gummatous disease of the membrane. Gross and Lancereaux (*Affect. Nerv. Syphilis*, 1861, p. 245) report a case having a clear syphilitic history, in which the dura mater was adherent to the skull. The pia mater was not adherent. Beneath, upon the vault of the brain, was a gelatinous exudation. The upper cerebral substance was indurated, and pronounced by M. Robin after microscopic examination to be sclerosed. At the base of the brain were very atheromatous arteries and spots of marked softening.

Dr. J. J. Brown (*Journal of Mental Science*, July, 1875, p. 271) reports a case in which the symptoms were melancholia, excessive irritability, violent outbursts of temper, very positive delusions, disordered gait, ending in dementia. At the autopsy, which was very exhaustive, extensive syphilitic disease of the vessels of the brain and spinal cord was found. The pia mater was not adherent to the brain. The convolutions, particularly of the frontal and parietal lobes, were atrophied, with very wide sulci, filled with bloody serum. The neuroglia of these convolutions was much increased, and "appeared to be more molecular than normal; the cells were degenerated and in many places had disappeared, their places being only occupied by some granules." These changes were most marked in the frontal convolutions.

H. Schule reports (*Allgem. Zeitschrift f. Psychiatrie*, xxviii., 1871–72) a very carefully and meritoriously studied case. The symptoms during life exactly simulated those of dementia paralytica. The affection commenced with an entire change in the disposition of the patient: from being taciturn, quiet, and very parsimonious, he became very excited, restless, and desiring continuously to buy in the shops. Then failure of memory, marked sense of well-being, carelessness and indifference for the future, developed consentaneously with failure of the power of walking, trembling of the hands, inequality of the pupils, and hesitating speech. There was next a period of melancholy, which was in time followed by continuous failure of mental and motor powers, and very pronounced delirium of grandeur, ending in complete dementia. Death finally occurred from universal palsy, with progressive increase of the motor symptoms. At the autopsy, characteristic syphilitic lesions were found in the skull, dura mater, larynx, liver, intestines, and testicles. The brain presented the macroscopic and microscopic characters of sclerosis and atrophy; the neuroglia was much increased, full of numerous nuclei, the ganglion-cells destroyed. The vessels were very much diseased, some reduced to cords; their walls were greatly thickened, and full of long, spindle-shaped cells, sometimes also containing fatty granules.

Dr. C. E. Stedman and Robert T. Edes report (*Amer. Journ. Med. Sci.*, lxix., 433) a case in which the symptoms were failure of health, ptosis, trigeminal palsy with pain (anæsthesia dolorosa), finally mental failure with gradual loss of power of motion and sensation. At the autopsy the following conditions were noted: apex of the temporal lobe adherent to dura mater and softened; exuded lymph in neighborhood of optic chiasm; sclerosis of right Gasserian ganglion, as shown in a marked increase in the neuroglia; degeneration in the basal arteries of the brain.

These cases are sufficient to demonstrate that sclerosis of the brain-substance may not only coexist with a brain-lesion which is certainly specific in its character, but may also present the appearance of having developed *pari passu* with that lesion, and from the same cause.

Cases of Cerebral Syphilis, with Results of Treatment.

No.	Reporter and Journal.	Symptoms.	Results. Remarks.
1	Louis Streisland..... Die Lues als Ursache der Dementia. Inaug. Diss., Berlin, 1878.	Epilepsy, delirium of exaltation, alteration of speech, headache, failure of memory.	Rapid cure with mercury.
2	Ibid.....	Delusions, delirium, general mania, great muscular weakness.	Cure with mercury.
3	Dr. Müeller, of Leutkirch..... Journ. of Mental Dis., 1873-74, 561.	Symptoms resembling general paralysis, and diagnosis of such made until a sternal node was discovered.	Cure by iodide of potassium.
4	Fr. Esmarch and W. Jersen..... Allgem. Zeitschrift f. Psychiatrie.	Sleeplessness, great excitement, restlessness, great activity, incoherence and violence.	Cure by mercury.
5	M. Leidesdorf..... Medizin. Jahrbücher, xx., 1864, 1.	Complete mania, played with his excrement, and entirely irrational.	Complete cure by iodide of potassium.
6	Dr. Beauregard..... Gaz. Hebdom. de. Sci. Méd. de Bordeaux, 1880, p. 64.	Symptoms resembling those of general paralysis.	Cure by iodide of potassium.
7	M. Rendu..... Ibid.	Loss of memory, headache, irregularity of pupils, ambitious delirium, periods of excitement, others of depression, embarrassment of speech, access of furious delirium ending in stupor.	Mercurial treatment, cure.
8	Ibid.....	Hypochondria, irregularity of pupils, headache, failure of memory, melancholy, stupor.	Mercurial treatment, cure.
9	Dr. Albrecht Erlenmeyer..... Die luetischen Psychosen, Neuwied, 1877.	Melancholia with hypochondriasis, sleeplesness, fear of men, and belief that they were all leagued against him.	Iodide of potassium, cure.
10	Ibid.....	Religious melancholia, with two attempts at suicide, ending in mania.	Iodide of potassium, cure.
11	Ibid.....	At times very violent, yelling, shrieking, destroying everything she could get hands on, at times erotomania; no distinct history of infection, but her habits known to be bad, and had bone ozæna and other physical syphilitic signs.	Iodide of potassium, cure.
12	Ibid.....	Epileptic attack followed by a long soporose condition, ending in mental confusion, he not knowing his nearest friends, etc., almost dementia.	Cured by mercurial inunction.
13	Ibid.....	Great fear of gendarmes, etc., mania, with hallucinations, loud crying, yelling, etc., then convulsion, followed by great difficulty of speech.	Cured by mercurial inunctions with iodide internally; subsequently return of convulsions, followed by hemiplegia and death.
14	Ibid.....	Great unnatural vivacity and loquacity, wanted to buy everything, bragged of enormous gains at play, etc.; some trouble of speech.	Iodide of potassium, cure. Attended to business and seems as well as before. Relapsed. (See Symptoms.)
	Ibid..... Relapse of Case 14	Fifteen months after discharge from asylum relapse; symptoms developing very rapidly, delirium of grandeur of the most aggravated type, with marked progressive dementia, failure of power of speech, and finally of locomotion.	Failure of various anti-specific treatment.
15	Dr. A. Erlenmeyer..... Die luetischen, etc.	Failure of mental powers, inequality of pupils, trembling of lip when speaking, uncertainty of gait, almost entire loss of memory, once temporary ptosis and strabismus.	Iodide of potassium in ascending doses failed. Recovery under mercurial inunctions.
16	Ibid.....	Failure of mental powers, pronounced delirium of grandeur, hallucinations of hearing, failure of memory, strabismus and ptosis coming on late.	Iodide of potassium, corrosive sublimate injections. Cure.
17	Ibid.....	Failure of memory and mental powers, slight ideas of grandeur, disturbance of sensibility and motility, aphasia coming on late.	Cure with use of iodide and mercurial inunctions.
18	Ibid.....	Melancholy, great excitability, ideas of grandeur, after a long time sudden ptosis and strabismus.	Iodide of potassium failed; mercurial course improved; joint use cured patient.
19	Ibid.....	Various cerebral nerve palsies, great relief from use of mercurial inunctions, then development of great excitement, delirium of grandeur, failure of memory and mental powers, and finally death from apoplexy. No autopsy.	
20	Dr. J. B. Chapin..... Amer. Journ. Insanity, vol. xv. p. 249.	Melancholia with attempted suicide, epilepsy, headache, somnolent spells.	Iodide of potassium, cure.
21	Ibid.....	Acute mania, noisy, very destructive; syphilitic disease of tibia.	Iodide of potassium, cure.
22	Dr. Snell.....	Maniacal excitement.	Cured by specific treatment.
23	William Smith..... Brit. Med. Journ., July, 1868, p. 30.	Apathetic melancholy, indelicate, speaking only in monosyllables, and much of the time not at all, sullen and menacing.	Rapidly cured by conjoint use of iodide and mercurial. The symptoms first developed three months after chancre.

It has already been stated in this memoir that cerebral meningeal syphilis may coexist with various forms of insanity, and cases have been cited in proof thereof. It is, of course, very probable that in some of such cases there has been that double lesion of membrane and gray brain-matter which has just been demonstrated by report of autopsies; further, if we find that there is a syphilitic insanity, which exists without evidences of meningeal syphilis and is capable of being cured by anti-specific treatment, such insanity must be considered as representing the disease of the gray matter of the brain. Medical literature is so gigantic that it is impossible to exhaust it, but the list of cases on the preceding page is amply sufficient to prove the point at issue,—namely, that there is a syphilitic insanity, which exists without obvious meningeal disease and is capable of being cured by anti-syphilitic treatment.

A study of the brief analyses of symptoms just given shows that syphilitic disease of the brain may cause any form of mania, but that the symptoms, however various they may be at first, end almost always in dementia, unless relieved.

Of all the forms of insanity, general paralysis is most closely and frequently simulated by specific brain disease. The exact relation of the diathesis to true, incurable, general paralysis it is very difficult to determine. It seems well established that among persons suffering from this disorder the proportion of syphilitics is not only much larger than normal, but also much larger than in other forms of insanity. Thus, Dr. E. Mendel (*Progres. Paral. der Irren*, Berlin, 1880) found that in one hundred and forty-six cases of general paralysis one hundred and nine, or seventy-five per cent., had a distinct history of syphilis, whilst in one hundred and one cases of various other forms of primary insanity only eighteen per cent. had specific antecedents.

Various opinions might be cited as to the nature of this relation between the two disorders, but for want of space the curious reader is referred to the work just quoted and to the thesis of C. Chauvet (*Influence de la Syphilis sur les Maladies du Système nerveux*, Paris, 1880) for an epitome of the most important recorded opinions.

Those who suffer from syphilis are exposed in much greater proportion than are other persons to the ill effects of intemperance, sexual excesses, poverty, mental agony, and other well-established causes of general paralysis. It may be that in this is sufficient explanation of the frequency of general paralysis in syphilitics, but I incline to the belief that syphilis has some direct effect in producing the disease. However this may be, I think we must recognize as established the opinion of Voisin (*Paralysie générale des Aliénés*, 1879) that there is a syphilitic peri-encephalitis which presents symptoms closely resembling those of general paralysis. Such cases are examples of the pseudo-paralysie générale of Fournier (*La Syphilis du Cerveau*, Paris, 1879).

The question as to the diagnosis of these cases from the true incurable paresis is of course very important, and has been considered at great length by Voisin (*loc. cit.*), Fournier (*loc. cit.*), and Mickle (*Brit. and For. Med.-Chir. Rev.*, 1877.)

The points which have been relied upon as diagnostic of syphilitic pseudo-general paralysis are:

The occurrence of headache, worse at night and present among the prodromes.

An early persistent insomnia or somnolence; early epileptiform attacks.

The exaltation being less marked, less persistent, and perhaps less associated with general maniacal restlessness and excitement.

The articulation being paralytic rather than paretic.

The absence of tremulousness, especially of the upper lip (Fournier).

The effect of anti-syphilitic remedies.

When the conditions in any case correspond with the characters just paragraphed, or when any of the distinguishing characteristics of brain syphilis as previously given in this memoir are present, the probability is that the disorder is specific and remediable. But the absence of these marks of specific disease is not proof that the patient is not suffering from syphilis. Headache may be absent in cerebral syphilis, as also may insomnia and somnolence. Epileptiform attacks are not always present in the pseudo-paralysis, and may be present in the genuine affection; a review of the cases previously tabulated shows that in several of them the megalomania was most pronounced; and a case with very pronounced delirium of grandeur, in which

the autopsy revealed unquestionably specific brain-lesions, may be found in Chauvet's Thesis, p. 31.

I have myself seen symptoms of general paralysis occurring in persons with a specific history in which, of these so-called diagnostic appearances, the therapeutic test was the only one that revealed the true nature of the disorder. In these persons a primary immediate diagnosis was simply impossible.

Case 14 of our table is exceedingly interesting, because it seems to represent as successively occurring in one individual both pseudo and true general paralysis. The symptoms of general paralysis in a syphilitic subject disappeared under the use of mercury, to return some months afterwards with increased violence, and with a new obstinacy that resisted with complete success anti-syphilitic treatment. Such a case is some evidence that syphilis has the power to produce true general paralysis.

In conclusion, I may state that it must be considered as at present proved that syphilis may produce a *disorder whose symptoms and lesions do not differ from those of general paralysis; that true general paralysis is very frequent in the syphilitic; that the only perceptible difference is one of curability; that the curable sclerosis may change into or be followed by the incurable form of the disease.* Whether, under these circumstances, it is philosophic to consider the so-called pseudo-general paralysis and general paralysis as essentially distinct affections each physician can well judge for himself.

RECENT PROGRESS IN THERAPEUTICS AND MATERIA MEDICA.

COCA.

UNDER the generic title of Erythroxylon, the last edition of the United States Pharmacopœia has officially recognized the Erythroxylon coca, which is known to have been used for ages by the natives of Peru and Bolivia as a stimulant, and especially to enable them to undergo protracted muscular exertion. The attention of the profession was called by Weddell in 1853 to its usefulness as an accessory article of food, as a substitute for tea and coffee, since it produces, like them, effects of a gently stimulating character without possessing nourishing qualities of its own. A number of experimenters and clinical observers have confirmed this opinion and recommended its use in conditions of lowered vitality or extreme fatigue. It is probable that it also exerts some effect upon the kidneys, resulting in an increased flow of urine.

Dr. H. D. Hicks believes that the properties of this drug deserve to be better known to the profession. In a paper (*New York Medical Journal*, February 23) containing clinical records of three cases, its remarkable effects in relieving the sense of fatigue after extreme muscular exertion, and in sustaining the physical powers under unusual demands, and in weak heart, are well demonstrated. Dr. Hicks uses the remedy in his practice in order to prevent and relieve fatigue; to relieve pains in the back accompanied by the discharge of dark-colored urine; in dyspnœa due to weakness of muscles of respiration; for palpitation of heart due to dilatation or weakness of the heart-muscle without valvular lesions; mental exhaustion and low spirits; depression of nervous system following sexual excesses, sick-headache, etc. Finally, he claims that it destroys the craving for alcohol, and that its habitual use as a part of the daily diet conduces to mental clearness and activity, freedom from fatigue, and sound sleep. These good effects were obtained from doses of half a drachm of the fluid extract several times daily.

ACTION OF THE OPIUM-ALKALOIDS.

According to some recent researches by Von Schroeder, conducted in Professor Schmiedeberg's laboratory in Strasburg, all the opium-alkaloids hitherto examined resemble opium in acting on the same part of the body,—viz., the central nervous system. This conclusion holds good only for mammals, and must be qualified in regard to the frog, for in it narcotine, codeine, papaverine, and thebaine have also a paralyzing action on the motor ganglia of the heart. These alkaloids agree with morphine not only in the organ they affect, but in the nature of their action. The symptoms may be divided into two stages: first, narcosis due to a paralytic action on the brain, followed by, second, tetanus due to increased irritability of the spinal cord. This agreement allows these alkaloids to be united with morphine into one group. Notwithstanding this qualitative agreement between the

action of these alkaloids on the one hand and that of morphine on the other, there are considerable quantitative differences in the development and persistence of the narcotic and tetanic stages. The narcosis these alkaloids produce, unlike that of morphine, is not very deep, and quickly passes away; in the case of thebaine it occurs in the frog, as well as in mammals. The rapid development of the tetanic stage characterizes the action of this alkaloid. There is not, as in the case of morphine, a progressive paralysis gradually destroying the functions of the different parts of the brain; the action quickly extends over the whole brain, and remains slight while symptoms of irritation have already begun. This fact renders it advisable to break up the group of opium-alkaloids into two sub-groups, the first of which may be called the morphine group, characterized by the prominence of the narcotic stage, while in the other, which may be called the codeine group, the tetanic stage is more prominent, and the narcosis less so. The members of these groups may be arranged as follows, so that each subsequent member has a weaker narcotic, and in the codeine group has, at the same time, a stronger irritant action: in the morphine group oxydimorphine; in the codeine group papaverine, codeine, narcotine, thebaine. The codeine group contains also hydrocotarnine, laudanosine, and cryptopine; but at present we know too little about them to assign a place in the group to them with certainty. The same may be said of codethyline. The codeine group becomes closely allied by its last members with the strychnine group. The members of the codeine group should not be used therapeutically for their narcotic action. In the codeines produced from morphine by the addition of alcohol radicals such as codethyline, $C_{17}H_{18}NO_2(OC_2H_5)$, obtained from morphine by the introduction of ethyl, the narcotic action is diminished, whilst the convulsive action is increased in proportion to the number of atoms of hydrogen substituted by alcholic radicals. In the alkaloids produced from morphine by oxidation (oxydimorphine and oxymorphine), their narcotic action is diminished, without the convulsant action being increased; narceine has no apparent physiological action.*

* Archiv f. Exp. Path. und Pharm., p. 96, vol. xvii., and Practitioner.

EFFECTS OF ARSENIC, LEAD, AND MERCURY ON THE SPINAL CORD.

Dr. Podow found that in acute poisoning with arsenic, lead, and mercury, marked alterations occur in the spinal cord having the character of acute central myelitis. When the poisoning is comparatively slow, these changes are not limited to the gray substance alone, but affect the white substance also, and present the characters of diffuse myelitis. The peripheral nervous system is completely unaltered in rapid poisoning by these substances. The clinical nervous symptoms observed in rapid poisoning—convulsions, paralysis, pain, and anæsthesia—are explained by the alterations just described; but none of these symptoms can be explained by any peripheral nervous affection.†

CORROSIVE SUBLIMATE IN THE TREATMENT OF DIPHTHERIA.

In the *Therapeutic Gazette*, Dr. F. C. Herr publishes a communication strongly advocating the use of the corrosive chloride of mercury in the treatment of diphtheria. In an epidemic at Harrisburg it was administered to infants in doses of one-twelfth of a grain—every two hours for the first four doses, the interval then being increased to four hours—with excellent results. In one case two grains were given in the aggregate during the course of the treatment without bad effects. The original states that *ten* grains were given; but Dr. Herr informed us that this was a misprint, and that the amount given was that which we have just stated.

A NEW USE FOR SANTONIN.

A case under the care of Dr. N. Anderson (*Lancet*, November 10), suffering with lumbricoid worms, reported that, as the result of his treatment, he had been relieved of his worms, and also that a long-standing gleet had ceased. The reporter thereupon recommends santonin for gleet, five grains rubbed up with an equal quantity of sugar of milk, to be taken twice a day, in milk. It is possible, in the case reported, that the effect of santonin upon the gleet was due to a secondary, and not to a direct or primary, action; however, there need be no difficulty about finding suitable subjects to try it upon. *Fiat experimentum in corpore vile.* F. W.

† Virchow's Archiv, and Practitioner.

EXCISION OF A PORTION OF THE POPLITEAL NERVE FOR GUN-SHOT WOUND, WITH NERVE-SUTURE.

BY THOMAS G. MORTON, M.D.,

One of the Attending Surgeons to the Pennsylvania Hospital; Fellow of the Academy of Surgery, etc.

M. C., aged 23, referred to me by Dr. B. C. Gulden, of Minersville, on the 12th of November, 1880, was admitted into my wards at the Pennsylvania Hospital on account of partial palsy of the limb and intense pain, resulting from a pistol-ball wound of the thigh and popliteal region.

The accident occurred on the 15th of September; the ball, which was one-thirty-second of an inch in diameter, entered the right thigh, striking the edge of the biceps tendon about four inches above the condyles; it passed underneath and across the popliteal region to the inner side, and lodged immediately under the skin, close to the head of the tibia. There was no hemorrhage, and the wound closed without suppuration. Immediately after the injury there was more or less palsy of the limb, with a marked tingling sensation, which soon changed in character to that of a burning pain, extending from the place of injury to the extremity of the limb, but especially severe upon the dorsum of the foot and ankle; shooting pain now and then extended to the hip; any manipulation of the skin or movement of the limb caused suffering of the most acute character. The atrophy of the limb was not marked, but the injured limb showed a difference of rather more than half an inch as compared with the left in calf-measurement. The surface-temperature of the injured limb at the knee was 88° F., or 4° lower than that of the other limb, while the temperature of the skin of the foot of the injured limb was 15° higher than that of the opposite side. Treatment prior to and after admission had not given the slightest relief, and the only measure of comfort was obtained by constantly sponging the limb, or having it completely immersed in water. The use of morphia by hypodermic injections, even in large doses, produced but little alleviation of the suffering.

From the course of the ball it seemed probable that the external popliteal nerve was either wounded or divided. The case seemed a fair one for an exploration with a view to an excision of the injured portion of the nerve. On November 20, I cut down upon the right biceps tendon, expecting to find the external popliteal nerve in its usual place, but, after a fruitless search, opened the popliteal space by another incision, and then found the external and internal branches had continued on together into the popliteal space. On passing my finger along the course of the combined trunk, I discovered an indurated mass surrounding the nerves, evidently the result of the passage of the ball.

On elevating and examining the nerve-trunks, I found that the external popliteal had been completely severed, and that the enlargement was principally in the injured internal trunk, through which the ball had evidently passed. I then excised an inch of the nerve, removing all the injured portion. After flexing the leg, the ends of the sectioned nerves were brought into close approximation with animal carbolized ligature, and the wounds were united with silver sutures. No suppuration ensued, and the wounds united at once.

From the time of the operation the patient was free of all pain, and the result was in every respect most satisfactory. The limb was kept flexed and at rest for five weeks, in order more reasonably to assure complete nerve-union. Gradual extension was then made without causing any pain or inconvenience. On the 8th of March, 1881, the patient was discharged cured.

Dr. Morris Longstreth, the hospital pathologist, wrote me as follows concerning the portion removed:

"The specimen shows about one inch of the length of the nerve. The sheath is much thickened, especially at the central part of the specimen, and the thickening is found to involve not only the peripheral parts of the sheath, but also the septum separating the two divisions or branches of the nerve-trunk. It is found, on examining the proximal end of the excised portion, that both divisions—the internal and external popliteal branches—are present in the mass, and that they present normal conditions as to their size; but on examining the distal end of the specimen it is seen that the external division or branch is considerably smaller at its point of exit from the mass than at the upper or entrance point. It is impossible to say whether this change of size is due to cicatricial contraction of new

tissue deposited as a result of the wound or to actual destruction of a portion of the nerve by the ball itself. It is quite evident that the nerve had been divided by the ball and reunion taken place, and that the specimen comes from the site of the bullet-track."

Dr. Gulden wrote from Minersville, under date of August 4, 1883, that he had seen M. C. within a few days, and that he would send him to Philadelphia.

On October 20, 1883, M. C. was again admitted into the hospital. The limb was found to be well nourished; the calf measurement showed a difference of an inch and a quarter as compared with the sound limb; a small ulcer existed on the sole of the foot and one upon the great toe. About nine months after leaving the hospital he had gone into the mines and worked for eight months, during which time he thought he contracted frost-bite, and it was at this time the ulcers formed. Upon re-admission, he was able to flex and extend the limb, but had but very slight power over the ankle, and none of the toes; the skin of the entire limb was sensitive, but sensation was rather diminished on the sole of the foot. With his brace he could walk any distance. Since the operation he had never had any pain in the limb, and the only inconvenience results from muscular feebleness.

PECULIAR NERVOUS MANIFESTATIONS IN A CASE OF DEATH FROM RAPID HEMORRHAGE.

BY LAMBERT OTT, M.D.,

Assistant in the Department for Diseases of the Nervous System in the Post-Graduate Course of Jefferson Medical College.

MRS. M., a middle-aged woman, in the eighth month of pregnancy, after lifting heavy articles in her duties about the house, was taken with accidental uterine hemorrhage. I saw her late in the day, after considerable blood had been lost and its serious effects had been partially produced. The child was rapidly delivered, assisted greatly by the bearing-down efforts of the patient, and immediately afterwards an enormous clot and much blood were expelled. The uterus contracted fairly, and there was no further hemorrhage. Immediately after the delivery she felt well, pulse being 90. I began to wonder how a woman could possibly live after such an excessive loss of blood. Barely had I passed the thought when I found her pulse running up to 140. She said, in reply to my questions, that she still felt well. The pulse had thus increased fully one minute, when rapid breathing set in, and then followed the most terrible array of symptoms it has ever been my misfortune to witness. Spells of darkness came before the eyes; intense headache, giddiness; vomiting, even of a teaspoonful of water; great pallor, lividity of the lips, and coldness of the extremities; beads of perspiration on the forehead; a painful and frightful consciousness of impending death, accompanied by vigorous muscular efforts, tossing from one side of the bed to the other, shrieking for help; breathing so labored and rapid, or sometimes prolonged and stertorous, as to be heard quite a distance; a desire to be raised higher, then still higher, clinging to anything near that afforded means for a grasp; and lastly she said, "All is getting dark. Raise me higher—higher! Give me more air!" With this she fell back unconscious, and died in a few minutes.

A point to be noted in this case is that there was a disturbance of the pulse some time before there was any abnormal sensation conscious to the patient. All the usual remedies were tried, such as lowering the head, elevating the foot of the bed, injecting subcutaneously ammonia, brandy, etc., but she was beyond control. She showed an inordinate strength in her efforts to overcome any forced attempt to retain her recumbent. Transfusion of blood might have saved life, but so much time had been lost that it was considered impracticable. The nervous system was in a peculiarly excitable condition: reasoning, assurance, and everything else were not strong enough to overpower the mental and physical excitement which seemed to have taken possession of this woman. Rapid death by hemorrhage is one where consciousness is preserved to the end, although the subject is painfully impressed with a sense of impending suffocation and death.

1531 North Seventeenth Street, Philadelphia.

Acting Assistant-Surgeon W. Thornton Parker has been ordered to Fort Leavenworth, to report for duty in the Department of Missouri.

TRANSLATIONS.

THE THERAPEUTIC APPLICATION OF NITROUS OXIDE GAS.—From a series of experiments made in Prof. Botkin's laboratory in St. Petersburg, Dr. S. Klikowitsch draws the following conclusions:

1. Nitrous oxide gas is incapable of supporting respiration in animals and plants, and, like other indifferent gases, leads to death from asphyxia. The asphyxia produced by this gas, however, presents points of contrast to the asphyxia produced by other means.

2. Nitrous oxide gas produces no chemical or morphological changes in the blood of animals, but is dissolved in it and again eliminated, according to physical laws, without apparently being broken up into nitrogen and oxygen.

3. Anæsthesia with laughing-gas is so closely associated with insufficient oxidation of the blood that it cannot be regarded as absolutely without danger, especially in diseases of the heart, lungs, or blood-vessels.

4. The association of laughing-gas with twenty per cent. of oxygen completely removes the possibility of asphyxia and produces a number of results capable of therapeutic application.

5. Under the influence of the mixture of laughing-gas and twenty per cent. oxygen, in the majority of healthy subjects, the heart's pulsations are increased, the pulse-wave diminished, and the respiratory movements decreased in number and increased in depth; these effects pass off in from three to five minutes.

6. In six cases of weak heart-action, the above gaseous mixture produced no unfavorable results; on the other hand, the pulse was decreased in frequency and increased in strength. These effects lasted from one to two hours.

7. In cases of disturbed respiratory innervation the mixture of laughing-gas and oxygen regulated the respiratory rhythm and rapidly removed the subjective and objective signs of deficient oxidation of the blood.

8. This gaseous mixture acts as a transient anæsthetic, and in angina pectoris causes a rapid removal of suffering.

9. It is to be preferred to chloroform as an anæsthetic in labor.

10. Vomiting and cough of reflex origin are arrested by a few inhalations of this mixture of gases. — *Virchow's Archiv*, xliv. 2. S.

COMBINED ŒSOPHAGOTOMY.—Instead of treating imperforable, cicatricial strictures of the œsophagus, as recently recommended, by the establishment of a gastric fistule, Gussenbauer has in two cases attempted radical cure by "combined" œsophagotomy. By this is understood the opening of the œsophagus at the point of selection in the neck (Guattani), by which access to the stricture and its division by a small herniotome moving on a hollow sound are possible. The incision of the cicatricial tissues is an easy operation with such an instrument, is not followed by inflammatory results or bleeding, and the constriction can be completely removed,—a result which is not possible by simple dilatation: dilatation must, however, be constantly practised as an after-treatment, as the only means by which a return of the stricture can be prevented. On the other hand, œsophageal strictures may be similarly treated through a gastric fistule, though in such cases the stricture must be limited to the cardiac orifice of the stomach. Even in such cases, however, the stricture could be at least as readily reached through an opening in the œsophagus. The clinical histories of both cases operated on by Gussenbauer are reported in the *Zeitschrift für Heilkunde*, iv. 5, 33.—*Centralb. f. d. Med. Wissen.*, January 19, 1884. S.

CONSTITUENTS OF PODOPHYLLIN.—Podrysatzki has found that the alcoholic extract of podophyllum peltatum (commonly called podophyllin) contains an amorphous resinoid substance, which has been named *podophyllotoxine*, but which is really a compound of picropodophyllin and picropodophyllic acid. The emetic and purgative effects of the drug are said to be due exclusively to the presence of the picropodophyllin.—*Répert. de Pharmacie.*

A NEW INJECTION FOR GONORRHŒA.—This sedative and antiseptic injection may be used even in the acute stage, with good results. It is claimed to be superior to any other single injection:

℞ Pulv. iodoformi, 20;
Acidi carbolici, 10;
Glycerini, 80;
Aquæ destillatæ, 200. M.
—*Campana.*

PHILADELPHIA
MEDICAL TIMES.

PHILADELPHIA, MARCH 22, 1884.

EDITORIAL.

THE USEFULNESS OF THE CODE OF ETHICS TO RECENT GRADUATES IN MEDICINE.

WITHIN the next few weeks the medical profession of this country will be enlarged, not to say enriched, by an accession to its ranks of an aggregate of nearly four thousand recent graduates fresh from the college hall and hospital clinic. As its ranks were already comfortably well filled, this large addition to the working force of the profession in the United States may disturb slightly the equilibrium in some places, especially in those large cities where the young physician is most likely to begin his unequal struggle for existence. It was formerly the custom for the colleges to present each candidate upon graduating with a copy of the Code of Ethics of the American Medical Association, in order to give him an idea of his relations to the medical profession and the community, and their reciprocal rights and privileges, that he might govern himself in accordance with well-established rules. This pleasant custom now seems to be more frequently neglected than honored. Unfortunately, it has come to be regarded by some as quite an evidence of progress to speak slightingly of the Code and of its "platitudes" and "goody-goody" teachings: in New York it has been deliberately rejected by some individuals and societies who profess to be governed only by the unwritten law of politeness, which is supposed to be sufficient for a gentleman who is also a physician. One objection to this plan is that, in the absence of a code, no agreement can be ever hoped for as to what specific acts *are* "unworthy of a gentleman and a physician." But the Code of Ethics provides exactly this information to the recent graduates who are most anxious to learn what is expected of them, and what treatment they have a right to look for in return from the profession and the community. It is true that the particular rules laid down for the conduct of the patient to his physician, to which much senseless criticism and ridicule have been directed, are not read by patients, nor was it intended that they should be by the distinguished men who framed them; but they teach the physician just invested with the honors, rights, and privileges of the medical degree what courtesy he should exact from those who come under his care, according to the common custom of the honorable profession of which he is a member, so as to aid in maintaining its honor and dignity. Pascal once said that "certain individuals reject the Bible because its precepts condemn their practices;" and we confess to a similar feeling when we hear that certain individuals are restive under the Code of Ethics of the American Medical Association. It is not claimed that the Code is beyond criticism in point of expression, but as regards its principles it certainly is in accord with those of true gentlemen and honorable physicians in every clime and country. The recent graduate need not fear, therefore, to adopt its suggestions in his intercourse with other practitioners and the public.

As a rule, the young physician wishes to identify himself with the profession as soon as possible, and will therefore naturally become a candidate for admission to the nearest County Medical Society. Acting under the teachings of the Code of Ethics, such new arrivals are cordially welcomed, and in the course of time, by a process of attrition and development, they settle down to their work, each man finding his level and going to his own place. It is to be regretted, however, that some

means is not adopted, during the attendance upon lectures, to instruct students systematically in their future duties to the profession, in order that they may not be too easily misled after their graduation into some medical by-way which appears a short cut to wealth but ends too often in disgrace and disappointment. In the absence of such teaching, the student is advised to read Dr. Samuel Jackson's "Advice to a Young Physician," in which much practical wisdom is manifested and good counsel given. Too often the sound advice of the valedictory address is missed among the exciting exercises of the commencement, whereas, had it been given before graduation, it would be permanently impressed upon the minds of the students. Failing in this, the lessons of professional etiquette must be subsequently learned by observation and experience, with the aid of a good conscience. Some remarks made by Mr. Chauncey M. Depew, in addressing the graduating class of the Medical Department of the University of New York,* are so appropriate and true that they are well worth repeating.

Every professional man, he said, owes something to the community in which he lives. All the educational, humanitarian, social, and political work of the neighborhood have legitimate claims upon him. His advantages impose upon him public activities, and, in a sense, leadership. The doctor's opportunities therefore surpass all others. He should keep himself informed and interested in all public questions, the friend of good government, and the enemy of bad rulers. His personality is often as potent as his medicine. If of right mind and character, he imparts to the sufferer something of his own vitality, breezy hopefulness, and contented cheerfulness. "The Lord deliver me," said the orator, "in mine extremity, from a doctor so absorbed in his own greatness or vanity that he cannot see me, the doctor who has a hobby and rides it rough-shod over my aching bones, or the doctor whose breath is steeped in tobacco and whiskey! An eminent physician once gave as an axiom that the secret of longevity was a clear conscience and good digestion. The secret of becoming an eminent physician is devotion to your profession, and a cleanly life and conversation."

* Medical Record.

SUICIDE BY ABSINTHE.

A CASE which was very recently reported in the Paris correspondence of the daily press, of a man who committed suicide in that city by an unusual means, is worthy of some notice.

A workman, becoming discouraged, determined to end his existence: stepping into a cabaret, he called for some absinthe, which was furnished him in a small glass, and which he drank at once. When the attendant's back was turned, he thereupon took a full bottle of absinthe from the shelf and rapidly drank off its contents. He fell to the floor in a state of coma, and then became convulsed, and shortly afterwards died.

It is, of course, well known that multitudes of our fellow-beings shorten their lives by the abuse of alcoholic liquors; but they do so unintentionally, accepting the consequences, if they think of them at all, as merely a disagreeable, though perhaps a necessary, condition of the gratification of their craving for stimulants. Individuals have also died suddenly after drinking a bottle of brandy upon a wager; but, as ordinarily used, alcohol is, as a poison, too slow and uncertain to suit either the murderer or the suicide. The toxic effects of absinthium are also well known, but usually they have been overlooked by the poisoner.

This particular case is noticed because the method of suicide was so novel in conception and so facile of execution that it may perhaps find imitators. The present pop-

ularity in France of absinthe has to some extent caused its introduction into social circles in this country, but the active nervous organization of the average American is poorly fitted to withstand the ravages upon nerve-structure belonging to the clinical history of chronic absinthe-poisoning. Under such circumstances, the futility and inconsistency of a law restricting the druggist in the sale of legitimate remedies become very evident; for the would-be suicide, if refused hydrocyanic acid by the apothecary, might accomplish his purpose by stepping into the nearest tavern and purchasing a bottle of absinthe; or, not being allowed to buy morphia without authority, he may purchase several bottles of soothing-syrup, and gather the draperies of his couch about him and lie down to pleasant dreams. Deaths from absinthe or patent-medicine poisoning* may be expected to become frequent as soon as the public begins to appreciate more fully the advantages of this form of committing suicide,—*tuto, cito et jucunde.*

LEADING ARTICLES.

IN THE CATSKILLS.

BY the completion of the New York, West Shore, and Buffalo Railroad, which courses north from Jersey City along the west shore of the Hudson River, the Catskills are brought within a few hours' ride of Philadelphia. This beautiful and well-known group of mountains, forming a part of the Appalachian system, is situated principally in Greene County, New York, but extends to the southward into the upper part of Delaware and Ulster Counties. These highlands are a favorite health-resort, and a large number of summer tourists find accommodation among them in hotels and boarding-houses during the heated term. The views are wonderfully varied and beautiful, reaching from the Green Mountains of Vermont to the Highlands at West Point, and overlooking the valley of the Hudson and the fertile fields in the farming-region to the west and south. One of the newest places of resort is the Grand Hotel on Summit Mountain, which was opened three years ago and accommodates about five hundred guests, and is situated on the line of the Delaware and Ulster Railroad.

A few words may be not without interest concerning the locality. The hotel is situated almost at the summit of a mountain twenty-eight hundred feet high, facing southwest, overlooking the beautiful Esopus Valley, which extends sixty miles, running nearly east and west, while beyond the everlasting hills rise verdure-crowned upon the horizon. Among the surrounding mountain-peaks may be seen Slide Mountain (4200 feet), Mount Cornell (3800 feet), Mount Wittemberg (4000 feet), Panther Mountain (3800 feet), Balsam Mountain (4000 feet), and Storm King (3800 feet), while the western view takes in the cultivated fields and dairy-farms.

From a recent visit of inspection of the premises, made at the invitation of Captain E. A. Gillett (who is well known among the visitors to the Catskills, as well as in this city, as an able hotel-manager, and who has leased the house for a term of years), it appears that the hygiene of the place is excellent, and that special attention has been directed to obtaining a pure water-supply and good drainage. Excellent water from a large spring about fifteen hundred feet from the house is pumped into the building and furnishes an abundant water-supply for all purposes.

The pure, invigorating mountain-air and beautiful scenery, and the walks and drives, are of course the principal attractions of such a resort; but pleasant society aud out-door life such as may be found at a place like this are great aids to the restoration of health or to the enjoyment of a summer vacation. Hay-fever is said to be unknown in this neighborhood, and the dryness and purity of the air, as is usually the case in mountain health-resorts, have proved of great service in chronic bronchial disorders and incipient phthisis.

* A poison for noxious animals has recently been patented containing cyanide of potassium, 5; strychnia, 6; Irish moss, 16; cocculus Indicus, 8; white glue, 4; honey, 160; wheat, 1600 parts, and flavored with oils of anise, peppermint, rhodium, and cumin. This would do as a "succession" powder: it will probably be sold at the corner groceries by the side of Battle's Insect Destroyer, Rough on Rats, Cures for the Morphia habit, and Paris green.

NOTES FROM SPECIAL CORRESPONDENTS.

NEW YORK.

THE Cartwright Lectures were delivered this season by Burt G. Wilder, M.D., February 2, 4, and 6, the subject being "Methods of Studying the Brain." The title, the author stated, was so brief and comprehensive as to be misleading. Given more extensively, it would read as follows: "Outlines and Illustrations of some Methods of Regarding, Obtaining, Preserving, Examining, Figuring, and Describing the Brains of certain Amphibia and Mammalia, which it is hoped may be of Aid in Studying the Normal Macroscopic Structure of the Human Brain." The lectures were well attended, and, although technical, were highly appreciated.

Dr. J. E. Janvrin has been appointed physician to the New York Skin and Cancer Hospital, to fill the position made vacant by the resignation of Dr. J. B. Hunter.

It is understood that a hospital devoted exclusively to the treatment of those suffering from cancer, and called the "New York Cancer Hospital," is about to be founded, to which Dr. James B. Hunter will be one of the physicians.

At the meeting of the New York County Medical Society, February 25, Dr. W. S. Halsted read a paper on "Adduction and Abduction in Fracture of the Neck of the Femur," and Dr. E. C. Spitzka one on "The Paths of Co-ordination."

Resolutions were read favoring the founding of a college of midwifery. They gave rise to some discussion, and in the course of some remarks one of the younger members expressed it as his opinion that there were already a sufficient number of specialties. The subject will come up for further discussion before the Society at its next meeting.

At the same meeting it was decided, in accordance with a motion from the chairman of the Committee on the Collective Investigation of Diseases, to send out a circular to the members of the Society, inquiring how many cases of intestinal obstruction had occurred in their practice, and whether they had in any case divided adhesive bands causing obstruction, and with what result. The discussion of such cases will take place at the next monthly meeting.

The New York Academy of Medicine seems to be in a fair way soon to extinguish the mortgage of seven thousand dollars on the property where it is located. Recently it received a gift of one thousand dollars from Dr. H. P. Farnham, and also two hundred and fifty dollars from Dr. C. R. Agnew, and sums of from fifty to one hundred dollars from several other liberal-minded members. It was voted at its last meeting to send out a larger number of copies of its Proceedings to exchanges. At present the exchanges received far exceed those sent in return. Authors of papers, however, would still be at liberty to furnish their papers, or abstracts thereof, to the medical journals.

The retail druggists have formed a union to oppose the underselling of patent or proprietary medicines and to maintain the list-price. As a large majority belong to the union, the wholesale houses have been compelled to fall in line, and hereafter the people will have to pay the printed price or do without their sure cures for rheumatism, consumption, and diabetes, liver regulators, and universal panaceas in general. The reason for forming the union may be briefly summed up in the following suggestive quotation: "The miserable practice of selling goods at starvation rates has led to the general adulteration of drugs, medicines, and foods. Dirt takes the place of food, inert matter is introduced into powdered drugs, whereby the therapeutic power of important medicinal agents is rendered ineffectual, the physician's skill is baffled, and the patient suffers." Now, if the philanthropic proprietors of these so-called medicines will only put the price so high that no person can pay for them, and if the retail dealers will not cut the rates, the people will in the end reap a substantial blessing from this action. But this, we fear, is utopian. By the way, could not physicians, without violating the advertising clause of the Code, by public lectures, or the public prints, or by other means, give the public some idea as to the limited usefulness of medicines, and of their possible mischievous qualities? Human nature in general is selfish enough to profit by any knowledge which is likely to put money into the pocket; and one of the most profitable of means is the promise to relieve the body of suffering. If people were impressed with the fact that medicines are of but limited usefulness, even in the hands of educated physicians, and that they are an unlimited evil, laying the foundation of all sorts of pains, aches, nervous disturbances, digestive disorders, kidney-difficulty, etc., when taken indiscriminately in the form of patent medicines of unknown composition, and to avoid self-advertising pretenders and impostors,—if they were impressed with these facts, there could be no doubt that the sick would be greatly benefited, while educated and conscientious physicians would find a wider and a more desirable field of usefulness, and would be enabled in a higher degree to command the respect of the public. Information, such as everybody ought to have, regarding the action of medicines and the preservation of the health, could be given in a manner interesting and intelligible to the lay reader, and without any name prefixed or parade of titles; in fact, no knowledge need be given regarding the identity of the writer,

further than that he is a regular and highly-respected person in the profession, and that the opinions he expresses receive the approval of the profession generally. Private lectures relating to the health are given now by some leading physicians of this city at the Young Men's Christian Association: why, then, might not the general public, by an extension of this plan, be freed of some of its superstitious and nonsensical ideas regarding the applicability of medicines to the cure of disease? The better the public is educated in such things, the more evident will be the distinction between the honorable, skilful physician and the ignorant, pretentious quack. How many an innocent child's health is ruined, for instance, by soothing-syrups and patent medicines which have a reputation for quieting restless and crying babies, the active ingredient of which medicines is opium in some form! If people who are in the habit of ignorantly dealing out such poisons to their children were once convinced of this fact, and that, because of their great power to do mischief, educated physicians prescribe similar remedies only with great caution and under urgent circumstances, is it not to be supposed that they would cease to poison their own offspring? Doubtless many persons unconsciously cultivate a taste for intoxicating liquors by taking so-called bitter tonics, appetizers, etc., when in principle they are strong advocates of total abstinence. Others buy patent medicines, thinking thereby to avoid a greater expense by going to a physician. But if such people were made clearly to understand that if they really need medicine it would be cheaper, in the end, at once to employ a physician, doubtless they would do so. One might suppose that people were sensible enough to know that a remedy claiming to be a sure cure for consumption, bronchitis, all pulmonary diseases, dyspepsia, liver and kidney diseases, piles, sore eyes, and every human ailment imaginable, if capable of anything at all, is also capable of much mischief when injudiciously used; yet as proof that it is not so regarded is the fact that hundreds of remedies thus advertised bring in a sufficient income to the patentee and manufacturer to enable them to grow rich, and also more than reimburse them for thousands of dollars spent in advertising. Owing to the importance of the matter, a responsibility rests upon the profession to enlighten the community. Might not some articles instructing the people in this regard carry some weight if issued with the endorsement of County or State medical societies?

The University of the City of New York held its forty-third annual commencement at the Academy of Music, March 11, conferring the degree of M.D. upon one hundred and sixty-four gentlemen.

The Bellevue Hospital Medical College held its commencement at Steinway Hall, Thursday, March 13, graduating one hundred and forty-nine candidates for the medical degree.

R. C. S.

PROCEEDINGS OF SOCIETIES.

NEW YORK PATHOLOGICAL SOCIETY.

A STATED meeting was held February 27, 1884, JOHN A. WYETH, M.D., chairman for the evening.

CANCER OF THE PANCREAS.

Dr. G. A. DIXON presented specimens removed from the body of a man, aged 54 years, who entered Charity Hospital on November 27, 1883. He had suffered from intermittent fever. He also stated that about two months before admission he had strained himself while lifting, and two weeks later he suffered from pain in the epigastric region, which was made worse on pressure. Five weeks later he vomited blood; the pain increased; he lost flesh. On admission, he was pale, emaciated; had emphysema and bronchitis; there was tenderness over the region of the liver. There was no perceptible change in the size of the organ. December 14, pain over the liver increased. There was jaundice; the bowels were sluggish. Later there was a severe attack of epistaxis. Examination of the urine showed bile. January 5.—During the past two weeks the patient had failed rapidly, and suffered from vomiting. January 9, he became delirious, vomited frequently, and died on the 12th.

At the autopsy the lungs were found to be emphysematous; the heart was hypertrophied and dilated. There was a tumor of the head of the pancreas, composed of cancerous structure of the scirrhous variety; it projected against the duodenum, giving rise to an irregular surface, which was at first supposed to contain cancerous deposits; but none such could be found on examination. The mass was a little over two inches in thickness, and nearly surrounded the duodenum. The liver contained some small nodules, scirrhous in character. The organ was normal in size.

The speaker referred to another similar case seen in Bellevue Hospital while he was an interne in that institution. The patient had been well up to August of the same year, at which time he was seized with a severe pain in the epigastrium, radiating into the back and right shoulder. There was vomiting, but no jaundice. The patient was able to go about his work the following day. A similar attack occurred the next month. Still a third took place, which disabled him from work. Jaundice then occurred; also constant nausea and vomiting. There was a tumor, apparently attached to and movable with the

liver, over which aspiration was performed and four ounces of a yellowish-red fluid withdrawn. On the next day the tumor was diminished in size, but on the second day it was larger than it had ever been before. Vomiting continued. On December 17 the patient was suddenly seized with sharp pains as in former attacks, became unconscious, and died in the afternoon of the same day. At the post-mortem, the pancreas was found pushed forward, and attached to one side was a large pancreatic cyst with thick walls and apparently filled with a bright-yellowish mucus. The cyst replaced the head and part of the body of the pancreas.

TUBERCULOSIS TESTIS.

Dr. JOHN A. WYETH presented the left testicle which he removed from a man, 27 years of age, who had slow inflammation of the organ of two years' duration. There was a family history of phthisis. The testicle seemed to be generally broken down, and there were two or three points of ulceration; the tunica vaginalis contained pus. There had been a varying temperature. The patient made a good recovery from the operation.

Dr. F. N. OTIS had seen some cases of tuberculosis testis apparently due to reflex nervous trouble, and mentioned a case in which both testicles became the seat of tubercular degeneration, apparently from the reflex influence excited by a spinal abscess.

Dr. J. H. RIPLEY thought the temperature mentioned by Dr. Wyeth as being present in this case—viz., 103° F.—was high for uncomplicated tuberculosis of the testicle.

Dr. A. G. GERSTER had seen several cases in which the temperature went above 103°, even without complicating disease of other organs. It should be said, however, that such high temperature occurred only when there was active breaking-down process.

Dr. WYETH thought the high temperature in his case due probably to the strong phthisical taint.

ANGIOMA OF THE LIP.

Dr. A. G. GERSTER presented a specimen which had been removed from a man, 31 years of age, upon whom, thirteen years ago, Prof. Koenig, of Göttingen, performed an operation for angioma of the under lip of the size of a hazel-nut. The cicatrix remained firm for ten years, and when the patient entered the German Hospital, three years later, Dr. Gerster found nearly the entire under lip involved by cavernous angioma. Considerable hemorrhage occurred at the operation. The specimen was chiefly of interest as showing the possibility of the recurrence of this otherwise non-malignant disease after the lapse of ten years.

Dr. WYETH said that he had removed a number of angiomata from different portions of the face, principally of the capillary variety, by excision, and he had found that scarcely a perceptible scar was left. He thought excision preferable to caustics and other methods, as removing the entire disease, and it was freer from danger.

Dr. GERSTER recalled one case in which a surgeon removed an angioma from the forehead of a young patient at the German Hospital, by the knife, which was followed by death. Doubtless, septic influence was communicated by carelessness.

MYO-FIBROMATA OF THE DUODENUM.

Dr. F. FERGUSON presented a myo-fibromata which was of interest on account of its unusual location. The patient was a middle-aged woman. The tumor had grown externally from the duodenum, and was copiously supplied with blood-vessels, which probably in time would have interfered with the function of the duodenum by pressure.

UTERINE FIBROMA.

Dr. FERGUSON also presented a specimen removed from the body of a woman, 38 years of age, who had borne seven children. Menstruation had been normal. About fifteen months prior to death, she began to suffer from pain in the pelvic region, and from backache and gastric disturbance. Later, she felt a tumor in the right inguinal region, which grew slowly, being, at the end of nine months, as large as a goose-egg. There was ascites. After admission, hemorrhage for the first time occurred, and of an alarming character. The operation of removal of the uterus and its appendages was postponed. Another hemorrhage occurred, and the patient died of exhaustion ten days later. The tumor was found to be sub-peritoneal, larger than a goose-egg, and the walls of the uterus were much thickened, the cavity of the organ measuring over five inches.

CARCINOMA OF THE STOMACH AND LIVER—"HORSESHOE" KIDNEY.

Dr. FERGUSON also presented specimens removed from the body of a man admitted to the hospital on February 4, 1884. He had suffered from two or three attacks of rheumatism in years past. For two years previous to admission, he suffered from "bilious" attacks, characterized by vomiting, loss of appetite, pain, and diarrhœa. He suffered for four months from distress after eating, and later from slight but constant pain in the stomach. The patient lost flesh and became cachectic. On the 12th of February there was nausea, vomiting of blood, and bloody stools. This was repeated on the 17th. During the last hours of life there was severe pain in the epigastrium. Death took place apparently from heart-failure.

At the autopsy, the cardiac end of the

stomach was found to have undergone carcinomatous degeneration: the adjacent mucous membrane was thickened; the liver was studded with numerous white nodules, surrounded by normal liver-tissue. The diseased structures presented large cuboidal epithelial cells, contained in a very fine stroma of fibrous tissue. The kidney contained some secondary deposits and had slightly undergone chronic diffuse metritis. It was of the horseshoe form.

A STATED meeting was held March 12, 1884, GEO. F. SHRADY, M.D., President, in the chair.

PERMANENCE OF THE DUCTUS ARTERIOSUS GIVING RISE TO HYPERTROPHY OF THE RIGHT VENTRICLE.

Dr. L. EMMET HOLT presented two hearts, one diseased, and the other, which was normal, for purposes of comparison. The diseased heart was removed from the body of a child which died at the fourth month from acute capillary bronchitis of four days' duration. The autopsy showed the lesions of that affection. There was also found constriction of the aorta about three-quarters of an inch above the aortic valve. The ductus arteriosus remained, and there was hypertrophy of both right and left ventricles, particularly so of the right,—a fact which Dr. Holt could not account for, in the absence of valvular lesion, except on the supposition that the right ventricle had to do a portion of the work of the left, pumping blood through the ductus arteriosus which would have been sent through the aorta by the left ventricle except for the constriction which existed in that tube. There was no history of cyanosis. There was no marked hypertrophy of the auricles. There was an opening at the foramen ovale, but it closed by a valve-like arrangement, preventing the passage of blood.

Dr. WYETH thought with Dr. Holt that the specimen was a rare one. Referring to the opening at the foramen ovale occluded by a valve-like action, he presented a similar specimen some years ago, removed from the body of a woman about 40 years of age. In that case he was able to pass the end of the little finger through the opening; and yet he doubted, owing to the presence of a valve-like arrangement, whether any circulation took place through it worthy of consideration.

SARCOMATOUS TUMOR OF THE DURA MATER, WITH NEGATIVE EVIDENCE IN CEREBRAL LOCALIZATION.

Dr. G. L. PEABODY presented the specimen, of which the history was necessarily somewhat incomplete. The patient was 70 years of age, a native of the United States, a druggist by occupation. On the evening of January 8 he was admitted to the hospital in a comatose state, in which condition he died twelve hours later. His history was obtained from friends. It was stated that, while the patient was a good liver, he was in no sense a drunkard; there had been no seizures suggestive of epilepsy or apoplexy; he had been in comparatively good health, but had had some business trouble. Half an hour before admission, he was seen, while walking on the street, to slip and fall. He almost immediately got up and went into a bar-room; he complained of headache and vertigo. Fifteen minutes later he became unconscious. On admission, the reflexes were found almost completely abolished. There was no facial paralysis. The pupils were moderately dilated, and irresponsive to light. There was a hæmatoma of the scalp in the left parietal region; no fracture could be discovered. The respiration was stertorous, the pulse rapid and feeble; the temperature gradually rose, and before death reached 104° F. At the autopsy was found marked œdema of the lower extremities, hypertrophy of the left ventricle of the heart, chronic diffuse nephritis, œdema and congestion of the lungs, the liver both fatty and cirrhotic. There was a hæmatoma between the dura and pia corresponding with that of the scalp, and causing greater pressure of the convolutions on the opposite side. In the same region, just posterior to the motor area and one centimetre from the median fissure, was a tumor three by four centimetres in diameter, situated between the dura and the pia, and causing a marked depression in the brain. It was found to be a spindle-celled sarcoma. Dr. Peabody thought it probable that the fall had caused the hæmatoma mentioned, and that, in addition to the other lesions, aside from the sarcomatous tumor, it would account for the patient's death. It was an interesting contribution in a negative sense to the doctrine of cerebral localization, that a tumor of this size could exist in the non-motor area and produce no symptoms.

The PRESIDENT supposed that of course the sarcomatous tumor had developed gradually, and that therefore the brain would have an opportunity to accommodate itself gradually to the pressure.

Dr. R. W. AMIDON thought it was extraordinary to what extent the brain-substance could be compressed by a growth or foreign body from the periphery, provided the pia mater or cortex were not invaded or inflamed, and yet produce no apparent symptoms. He once saw a case of pachymeningitis in which the brain-substance in the motor area for a distance of four or five inches in diameter was compressed to the extent at the deepest portion of one inch, and yet there had been no symptoms until just before death, the man dying comatose. There had been no motor symptoms whatever.

PATHOLOGICAL SOCIETY OF PHILADELPHIA.

THURSDAY EVENING, FEBRUARY 28, 1884.

The PRESIDENT, Dr. TYSON, in the chair.

Two cases of suppurative nephritis. Presented by Dr. W. E. HUGHES.

IN both of these cases the kidney-lesion had been preceded by cystitis,—in one of some months' standing, in the other of more recent origin. In both of them there was a history of gonorrhœa, and in one well-marked symptoms of stricture of the urethra; in this case the cystitis seemed to have been originated by septic matter carried into the bladder on a catheter, although a tendency to inflammation had most likely been developed by the long-standing stricture. In one case the kidney-lesion may have originated in emboli derived from a suppurating surface, though this is unlikely, from the fact that no such emboli were found elsewhere.

Case I.—A man, æt. 35 years, had locomotor ataxia for years. He had gonorrhœa, but following it no change from the normal in urination, so that it is scarcely probable that there was any stricture of the urethra. Six months ago, as the result of exposure, cystitis developed, with the usual signs of frequent passage of urine containing large quantities of mucus and pus; there were no tube-casts, and no more albumen than could be accounted for by the pus-corpuscles present. After being under observation about two months, large bed-sores developed over the sacrum and trochanters; they soon induced a septicæmic condition which rapidly produced death. At the autopsy the nervous lesions characteristic of locomotor ataxia were shown. The urinary bladder was dilated, its walls thickened, its inner surface crossed in every direction by bands of hypertrophied muscular tissue; the mucous membrane thickened and slate-colored. In the kidneys were numerous cone-shaped masses, in which the tissue of the kidney was broken down and infiltrated with pus, and the blood-vessels filled with micrococci. The remainder of the kidney-tissue appeared healthy. There were no abnormal appearances about the pelvis and ureters.

Case II.—A man, æt. 72 years, had several attacks of gonorrhœa and symptoms of urethral stricture lasting over thirty-two years. The stricture had been dilated several times; but during the six months before he came under observation it had been neglected and had begun to grow troublesome. When first seen, his urine was normal, and there were no signs of cystitis. He had been failing in health for some time, and was much troubled by a cough. Physical examination showed breaking down of the lung-structure at the apices. A few days after coming under observation, his nose bled so uncontrollably that it became necessary to plug his posterior nares. Soon after this, his stricture almost preventing the voiding of urine, a catheter was passed into the bladder. The next day he complained much of pain and tenderness in the region of the bladder, and the urine, which was passed every few minutes, contained large quantities of blood, pus, and mucus. The acute symptoms were soon relieved, but the urine continued loaded with mucus and pus; in fact, it was often so stringy that it was only with the greatest difficulty that he could pass it. It never contained casts nor more albumen than could be expected where there was so much pus and blood. He died two months after he was first seen. The autopsy showed tuberculosis and disintegration of the pulmonary tissue. The kidneys were identical in appearance with those in Case I., with the addition that their pelves contained numerous particles of uric acid. The cavity of the bladder was small, its walls thickened and hypertrophied, the mucous membrane dark red, thickened, softened, and thrown into folds.

Dr. TYSON said that the relation of bladder- to kidney-trouble was as yet pretty much guess-work, although it is certain that, in a prolonged cystic disease, suppurative interstitial nephritis will sooner or later arise. But rarely can we state, from an examination of the urine, that renal disease has supervened. He happened, however, now to have under his care two cases of cystitis with renal disease, in which it was comparatively easy to determine the presence of the latter along with the former by reason of the presence of compound granular cells and fatty tube-casts, in addition to pus. The character of the casts pointed rather to tubular nephritis than to the interstitial form, contrary to the ordinary belief with regard to these cases.

Specimens of enlarged bronchial glands which had caused intra-thoracic pressure. Exhibited by Dr. E. T. BRUEN.

These specimens were taken from the body of a man, æt. 44, who had suffered for some years from chronic bronchitis, probably due to exposure in the gas-works. There was no emphysema. The bronchial glands are deeply pigmented and much enlarged,—forming in all a mass five inches long, three inches broad, and two inches thick. This enlargement surrounds the trachea, and slightly overlaps it anteriorly. A portion of the formation covers the origin of the right bronchus, but the left is also somewhat enclosed by the enlarged glands. In addition, many isolated bronchial glands will be found much increased in size. The lungs presented evidences of chronic bronchitis and lymphatic irritation. The aorta is atheromatous and dilated; the heart normal. This specimen is exhibited chiefly to illustrate the possibilities of intra-thoracic press-

ure from this source. It will be seen that these enlarged glands occasioned serious pressure upon the lower portion of the trachea and the upper portions of the bronchi. During life there were many symptoms traceable to reflex irritation of the pneumogastric nerve, and there were also symptoms of pressure upon the œsophagus.

The writer has published a detailed account of the symptoms incident to similar conditions in the *American Journal of the Medical Sciences*, July, 1883.

The cause of the enlargement of the bronchial glands in this case must have been the chronic bronchitis, although similar enlargements sometimes follow dilatations of the aorta. It is curious to note that degenerative changes in the lungs or hepatization were not observed.

Dr. SHAKESPEARE said that the case was of interest from several points of view, one of which was the great enlargement of the bronchial glands without either lung or other thoracic disease. It was an extraordinary thing that the enlargement had progressed so far without any apparent primary point of origin in the tissues in which the lymphatic radicles take their rise.

Dr. TYSON was inclined to attribute their enlargement to anthracosis.

Dr. BRUEN said that one of the latest writers upon bronchitis states that the reason for the intractability of chronic bronchitis is the constant coexistence of lymphatic disease, thus inducing venous congestion, catarrh, etc.

Cystic degeneration of a fœtal kidney. Presented by G. E. DE SCHWEINITZ, M.D.

I desire to present this evening an example of cystic degeneration of a fœtal kidney. The specimen was removed from an eight months' fœtus, brought to the University Museum by Dr. George Horn, of this city. The fœtus in question, in addition to this anomalous condition of its kidneys, presented also other interesting abnormalities, having, at the position of the posterior fontanel, a large meningocele; further, an imperfect development of the external genital organs; also six fully-developed fingers upon each hand, and a similar number of equally fully-developed toes upon each foot. Upon opening the abdominal cavity, both kidneys were found to present the appearances of the one exhibited to-night. It is enlarged, having a length of about four and a half inches and a breadth of nearly three, or a little greater than the size of a normal adult kidney. The capsule can be detached with a moderate degree of force, and the organ is surrounded with its usual envelope of perinephritic fat. Both upon the free and upon the cut surface are seen numerous cysts, varying in size from a small marble to a split pea, or even smaller; each cyst having a moderately firm capsule, and, upon incision, discharging a fluid contents. Very distinct lobulation of the kidney is a marked feature. It is perfectly plain that we have here a specimen of what is referred to by systematic writers upon pathology as congenital renal cysts. Rindfleisch speaks of kidneys of this sort usually producing death to the child either during birth or immediately after, by pushing the diaphragm up and thus occupying space necessary for the movements of the lungs. He further indicates that the Malpighian corpuscles constantly prove the points of departure for these cysts, although degeneration in the continuity of a urinary tubule may also contribute to the formation of the cystoid change. Both Virchow and Rindfleisch consider "an intercalation of a mass of connective tissue between the renal calyces and renal papillæ" as a cause of this congenital cystoid degeneration. A rather hurried microscopical examination of this specimen reveals the following points: nearly a total absence of any true renal structure, the greater mass of the organs being composed of connective tissue, through which are scattered numerous free nuclei; cysts the walls of which are lined with a single layer of cubical epithelium, and in these, which evidently arise from Malpighian corpuscles, the remains of the vascular tuft are sometimes seen, the wall having been drawn back from the vascular coil, as Rindfleisch puts it; quite large vascular channels and blood-vessels, usually filled with blood-corpuscles; and, finally, decided areas of fatty infiltration, the fat-cells having inserted themselves between the connective tissue. Further and fuller microscopic examination of the organ may probably discover other and different changes which have not been described. Joh. Klein demonstrated renal cysts in an adult case to arise from degenerated Bowman's capsules, which contained cholesterin crystals, fat-granules, and calcareous grains, or, as he expressed it, "renal sand." Such conditions were not discovered in this case.

Dr. TYSON said that it was remarkable how long persons with this congenital cystic trouble will live. Adults are found, post mortem, with kidneys the size of a fœtal head, with cysts as large as marbles, and apparently no renal tissue left,—conditions which have evidently existed for years.

Round-celled sarcoma of the superior maxilla; excision of that bone with the malar. Exhibited by Dr. C. B. NANCREDE.

Thomas A., æt. 56 years, was admitted to the male surgical ward of the Episcopal Hospital in the fall of 1883 with what appeared to be an ordinary epulis of the back part of the right superior maxilla. On November 2, 1883, Dr. Packard removed the growth, with the contiguous alveolar processes, and wiped out the wound with a twenty-grain solution of

chloride of zinc. Microscopic examination of the growth showed it to be a small round-celled sarcoma. It rapidly returned, so that in two weeks the growth was larger than when first removed. Dr. Packard removed this second growth, with the outer wall of the antrum, the alveolar border, and most of the maxillary tuberosity, and again wiped out the wound with chloride-of-zinc solution. All morbid tissues seemed removed: yet in less than six weeks it again began to fungate, and during the past week its enlargement can only be compared to that of a mushroom, the increase from day to day being readily perceptible. On February 27, 1884, the growth nearly filled the mouth and pharynx, and pressed upon the tongue so that deglutition was almost impossible, Accordingly, upon that day, I proceeded to perform a formal excision of the upper jaw, removing also the right malar and part of the left side of the ethmoid. Owing to the efficient assistance of my colleague, Dr. Forbes, the hot iron was unnecessary, the internal maxillary being caught and tied with singularly little loss of blood.

NEW YORK ACADEMY OF MEDICINE.

A STATED meeting was held March 6, 1884, FORDYCE BARKER, M.D., LL.D., President, in the chair.

The scientific paper of the evening was read by Dr. GEORGE B. FOWLER, on

THE DETECTION OF ALBUMEN IN URINE, WITH A REVIEW OF THE METHODS RECENTLY ADVANCED.

The lecturer premised that he should treat of the subject in a somewhat elementary manner for the purpose of making himself perfectly understood. Albumen might be native or derived. The *native albumen* of the urine is like that which normally exists in the blood-serum, and is therefore called serum albumen. A variety of substances are capable of demonstrating the presence of this serum albumen, but many of them are not applicable for the purpose of detecting its presence in the urine because of the complex nature of this fluid. He should consider only those reagents which are of practical value.

The following methods were given for detecting the presence of serum albumen in the urine:

Heat. If serum albumen be subjected to heat, it will grow opaque at about 60° C., and coagulate at about 73° or 74° C. The solid coagulum contains about nine per cent. of albumen. By this test the paralbumen present cannot be distinguished from the albumen, as both are alike coagulable by heat.

The coagulum from diluted albumen is less firm and the opacity less marked. If to the pure albumen an organic acid be added, no coagulum would be formed by the after-application of heat, as by the addition of acid, albumen is converted into an acid albumen, which is not coagulable by heat. This is an important practical point, as the physician might make the mistake of introducing, for instance, nitric acid before applying heat, expecting to find the albumen precipitated if any were present.

A similar occurrence is noted in very alkaline urine, for, if to serum albumen a considerable quantity of an alkali be added, an alkaline albumen would be formed, which is not thrown down by heat. Very alkaline urine, therefore, requires a little acid to neutralize its excessive alkalinity, in order to detect the presence of a trace of albumen.

The derived albumens are formed when the fluid containing the albumen is excessively acid or alkaline, and such derived albumens have their own reagents. By diluting an alkaline or an acid urine up to the point of neutralization, a precipitate of albumen can be obtained by the application of heat. The proportion of albumen which heat will thus detect is about .2 per cent. Heat applied to a solution containing this proportion of albumen will cause a slight but evident opacity, if the solution be neither strongly alkaline nor strongly acid.

Mineral acids will also precipitate albumen, and one of the best and most delicate tests is nitric acid. It will detect .1 per cent. trace of albumen by overlaying the acid with the urine in a test-tube.

The neutral salts, subsequently acidulated, will precipitate albumen. For instance, the preparation of chloride of sodium, which is used by Dr. Roberts, of Manchester, England, Dr. Fowler considered a very delicate test indeed; but he did not esteem it as highly as a solution of the ferrocyanide of potassium. The brine, when kept a while, is open to the objection that the salt forms crystals about the stopper and mouth of the bottle. Ferrocyanide of potassium in solution with a weak acid will reveal a .1 per cent. solution of albumen.

Picric acid, which was first brought prominently forward as a reagent for the detection of albumen by Dr. Johnson, of England, is a very delicate and excellent test, and will show the presence of a .1 per cent. solution of albumen. It is, however, open to the objection that it also precipitates the peptones, the urates, and the cinchona alkaloids when they are present in the urine. But if these substances were present they could be made to disappear simply by the application of heat, or, in the case of one, by reaction with Fehling's solution. It is necessary, in using picric acid, to add an equal bulk of the acid and urine; for, if but a small amount of the reagent be employed, the precipitate which it caused will readily disappear on shaking the test-tube.

Dr. Oliver, of London, has recently introduced the tungstate of sodium with a weak acid, first employed in France, as a test for the presence of albumen in the urine. It shows the presence of a .1 per cent. solution of albumen. The most delicate test which has been introduced is the potassa-mercuric iodide, which is made with iodide of potassium 3.32 ccg., mercuric bichloride 1.35 ccg., and water 100 ccm. It is a perfectly clear and transparent liquid, and when added to albumen in this state it produces no effect; but with the addition of a weak acid, citric or acetic, a marked coagulum is formed. It revealed the presence of a .01 per cent. solution of albumen.

The importance of being able to examine urine for the presence of albumen at the bedside of the patient is generally recognized, but until recently no convenient method had been presented. The object has now been attained, however, by Dr. Oliver, with the use of his test-papers. They are made by saturating paper with the solution of tungstate of soda, with potassa-mercuric iodide, or with the ferrocyanide of potassium, and other papers are acidulated with citric or acetic acid. Let these papers dry, cut into small strips, put into a box with a partition, and, when desired to examine a specimen of urine for albumen, put one of each of the two kinds of paper into the fluid, and if albumen be present it will be seen to precipitate in a cloud. The most delicate of these test-papers is the potassa-mercuric iodide, which easily reveals the presence of .05 per cent. of albumen. Indeed, the test is so delicate that in nearly every specimen of urine, from the healthy as well as from the sick, a slight precipitate of albumen takes place.

The author demonstrated the use of these several reagents, and expressed special preference for the test-papers of potassa-mercuric iodide prepared by Dr. Oliver; but the nitric acid, picric acid, acidulated solution of ferrocyanide of potassium, potassa-mercuric iodide, and the tungstate of sodium, are all very good and reliable tests.

DISCUSSION.

Dr. E. D. HUDSON was requested to open the discussion, and said that, as had been suggested by the President, the general practitioner of medicine regards the examination of urine for albumen from a practical point of view. He wishes not only to be acquainted with the most convenient and safest methods for determining the presence of albumen, but he wishes also to be informed of the significance of that material when present. But, limiting further remarks to the methods of examination, he had kept himself informed with regard to the new reagents which had been introduced, but he had been, and was now still more, convinced that for the busy practitioner none of the new methods are likely to prove more practical and reliable than the old one of heat and nitric acid. He did not think that the diagnostic significance of the presence or absence of albumen is such as would justify us in neglecting further examination by the microscope in a case of suspected renal disease. As phosphates are so commonly present in urine, and are precipitated by heat, he makes it a custom to keep a vessel of ice-water on the table, and immediately after getting a precipitate from heat he places the tube in the cold water, and by the time another specimen is examined, the phosphates, if any are present, disappear.

Dr. G. GRISWOLD said there were two points from which to view this subject. One was the chemical, the object of which was to detect the least possible trace of albumen; the other, the clinical, the object of which was not so much to detect the least possible amount of albumen as to furnish a convenient and practical test for the physician. The mere presence of a small amount of albumen in the urine is not now considered of such serious significance as formerly it was. Probably the old heat and nitric acid test are all that is needed from a clinical stand-point. It is important to have a perfectly clear specimen of urine, and if necessary liquor potassæ should be added. It is further necessary to view the specimen against a dark background, especially if but a trace of albumen be present.

Dr. C. DOREMUS heartily endorsed the remarks of Dr. Griswold regarding the distinction between the clinical and the chemical stand-point in viewing methods of examining urine for albumen. The test-papers of Dr. Oliver, however, might be very convenient for use at the bedside. The results of the most delicate tests were apt to be obscured by the want of a perfectly clear specimen of urine. He had found the ferrocyanide of potassium and acid test a very good one.

Mr. MUNN had been able to detect the presence of albumen in the urine after the use of a reagent by placing it in a pencil of light as it came through a hole in a dark window-shade, after others had failed to do so.

Dr. MAXWELL thought there was but little difference between the picric acid test and tungstate of sodium as regards delicacy of test for albumen. But we should not depend upon a single reagent. It is always safer to apply several different tests in any given case. But the mere presence of a small amount of albumen in the urine, without other signs or symptoms, he did not regard as of serious significance.

Dr. FOWLER, in closing the discussion, agreed with the last speaker that entire reliance should not be placed upon a single test. He could not agree with Dr. Griswold that we should not go into unexplored fields. It had

not been determined that the traces of albumen revealed by the more delicate tests were not of clinical significance. That peptones were sometimes present in urine he had witnessed, and the best test therefor was reaction with Fehling's solution.

THE MEDICAL JURISPRUDENCE SOCIETY OF PHILADELPHIA.

THE first stated meeting of this Society after its organization was held at the hall of the College of Physicians, Philadelphia, March 11, 1884. Professor S. D. GROSS, M.D., President of the Society, occupied the chair. About fifty members were present.

Dr. JOHN J. REESE read the paper of the evening, entitled

MEDICAL EXPERTS.

After speaking of the importance of medical expert testimony in criminal trials,—especially in capital cases,—Dr. Reese replied to the question, "Who are medical experts?" by remarking that the courts allowed a very considerable latitude in their definition of this term, permitting any person to act as such, no matter with what school of medicine he was connected, whether educated or ignorant, provided he announced himself as a practitioner of medicine and acquainted with the points under discussion at the trial. The consequence of this laxity on the part of the courts is that no distinction is practically made between the competent and the incompetent medical expert, the latter being permitted to give his evidence with all the force and authority of the most skilled and learned witness, and thus might completely neutralize and invalidate the testimony of the former.

Dr. Reese adverted to other evils connected with our defective system of medical expert testimony: one is the too frequent custom by opposing counsel of retaining "experts" in certain criminal and will cases who are known to have a bias towards some *hobby*, or preconceived notion, which might support their particular side; and also of a still lower and more reprehensible employment of such testimony, where the "expert" makes his *opinion* a matter of barter and sale to the party employing him. Of course the latter evil will only be found among the unprincipled charlatans of each of the professions of medicine and law; but the very fact of its existence is a strong ground of appeal for its correction.

The remedy proposed and advocated by Dr. Reese for the admitted imperfections of our present system of medical expert testimony is, first, to insure a more thorough and systematic education of those physicians who propose to offer themselves as medical experts; and, secondly, the adoption of the plan of *State medical experts*, as founded upon the German system, and which has been shown by experience to secure the desired end better than any heretofore employed. The outline of his plan, which he does not claim to be original, is as follows. Let there be appointed by the proper State authorities a medical officer, to be named the "State Medical Expert." He shall be a thoroughly-educated practical physician, and one properly trained in all the details of medical jurisprudence, including toxicology. His duties shall be to attend at any criminal trial in his district, when summoned by the court, as the skilled witness for the prosecution. He shall sit with the judges throughout the whole trial, as the *amicus curiæ*, giving special attention to such points as may require the professional assistance of medical experts, so that he may enlighten the court and jury on the technical aspects of the case. He shall, if desired, assist the prosecuting counsel in preparing the case, by suggesting the proper questions to put to the professional witnesses. He shall be prepared to make all the requisite medical and toxicological investigations in any case requiring them, thus in poison cases saving the district attorney much trouble and expense in hunting up a suitable toxicologist. By his expert testimony the prosecution would always be guided. He should possess a chemical laboratory, and all other appliances necessary for the complete fulfilment of his duties. Although summoned by the State, he is by no means to be regarded in the light of a partisan, any more than the judge upon the bench. He can have no temptation to a bias for either side. He would give his opinion grounded solely upon truth, and his moral and professional character and acquirements should be such as to preclude the possibility of error, so far as is consistent with human infirmity.

In most criminal trials the testimony of such an official expert (as in the case of the late distinguished Professor Casper, of Berlin), commanding, as he ought to do, the respect and confidence of all parties, would be deemed fully adequate to settle all scientific questions. But there would doubtless be some cases in which the defence would claim the right (which of course would be always conceded) of employing their own expert. But this need produce no collision with the State officer, since if the former be a thoroughly competent expert he will be the more likely to agree with the latter.

In a State so populous as Pennsylvania, there should be at least two such officials,—one for the eastern and one for the western district,—possibly more. The salary should, of course, be sufficiently ample to command the very best talent, inasmuch as the medical officer would necessarily be compelled to relinquish all practice and devote himself exclusively to his State duties. But even in an economic point of view the State would

probably be the gainer by the proposed arrangement, inasmuch as the yearly aggregate amount which the various counties are compelled to pay out for toxicological and other examinations in their respective criminal trials would equal, if not exceed, even a liberal salary allowed to the State medical expert.

The only real difficulty would probably be in the mode of appointment. Unquestionably, such a dignified office ought to be lifted high above all political favoritism. It should be bestowed only upon the most competent. But who shall decide this important question of competency? Obviously, not the Legislature, for it could have no means of judging of qualifications except through the representations of constituents; and everybody knows that these must partake largely of the worst forms of political favoritism. Neither should the responsibility be laid upon the Governor, for a like reason. The State Medical Society might by some be deemed the proper body to, at least, suggest the suitable appointee to the civil authority, but it is to be feared that even here there might be some risk of cliquism, ring-influence, or favoritism. On the whole, it would seem that the safest body with whom to lodge the responsibility would be the judges of the Supreme Court of the State. They might act in full council, after due consideration of the claims of the respective claimants, and their decision, to be determined by vote, would doubtless be regarded as impartial and satisfactory by all.

Remarks were made on the paper by R. C. McMURTRIE, Esq., Dr. HENRY LEFFMANN, Judge ASHMAN, and others.

Some routine business followed the discussion.

REVIEWS AND BOOK NOTICES.

A TREATISE ON THE DISEASES OF THE NERVOUS SYSTEM. By JAMES ROSS, M.D., LL.D. Second Edition, Revised and Enlarged. New York, William Wood & Co., 1883.

The work of Dr. Ross as it lies before us may certainly be characterized as one of great magnitude. In length, breadth, and thickness it rivals not altogether the pyramid of Cheops, but it surpasses it in complexity; and when we consider the enormous number of laborers who have threshed out with infinite toil the multitudinous grains of knowledge which have been gathered by Dr. Ross into this great granary, it may be that almost as much of human labor and of human suffering are represented in this monument of modern science as in the mausoleum of the Egyptian despot.

The two volumes are each of about a thousand pages, and might better be called an encyclopædia than a treatise. Much of the space is occupied with anatomical and physiological discussions, which we confess seem to us out of place in such a book. Anatomical and physiological treatises abound, and are, or ought to be, in every doctor's library. The student studies these sciences before he does the Practice of Medicine; and the practitioner who wants to furbish up his anatomy naturally turns, not to his books on Practice of Medicine, but to his Sharpey and Quain or to his Allen.

It is plain why many men are so prone to load their pages with irrelevant matter as Dr. Ross seems to us to have done: it is because the subject has grown up in such manner in their own mind: when an author wishes to write on a brain-region, he restudies first the anatomy and then the physiology of the part, and is apt to forget that it is the fruit, not the methods, of his labor that the reader desires.

All this may seem trifling and unworthy of notice in a review; but to the man whose literary needs are greater than his purse-power it is no trifle to have to buy five dollars' worth of anatomy in duplicate in order to get ten dollars' worth of nervous diseases. Then, when one wants to find a thing in a hurry it is very provoking to have to wade through bogs of anatomy to get to the land he is searching out.

The great French systematist, Prof. Grasset, has had a much truer and more artistic instinct, and hence his book is more satisfactory to the neurologist who reads French than is that of Dr. Ross. While saying this, we hasten also to say that, so far as the English language is concerned, Dr. Ross's treatise is the best to be obtained. It bears the mark of much conscientious work, is usually very clear, although somewhat heavy, in style, and is written with judgment.

Whilst perusing the book, we marked a number of places which seem to us to need comment. Some of these we shall allude to; for others, space is wanting. Thus (volume i.), in the discussion of the "Trophic Affections in the Territory of the Trigeminal Nerve," p. 509, no mention is made of the curious but carefully-studied affection, probably due to sclerotic changes in the trigeminal nuclei, in which the teeth suddenly drop out from atrophy of their sockets, and finally the whole dental region wastes away. On p. 562, when considering the "Treatment of Chronic Spinal Accessory Spasm," nothing is said concerning the use of the actual cautery, which we have seen to cure this most obstinate affection. "Migraine" is treated of as a disease of the sympathetic nerve, of which, however, there seems to us no proof. This is theoretical matter; but, as an exceedingly practical fact, we should like to recommend the combination of the bromide of potassium and the deodorized tincture of opium (℥i to ♏xx), as almost a specific in the paroxysms of pain. We have seen this combination over and over again enable a patient to rise

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and go about her daily duties, relieved, without being apparently influenced in any other way. If the patient be impressed with the fact that the system gradually gets accustomed to this narcotic, and the remedy must be husbanded, great relief may be obtained for many years. We know of one lady who for twenty years has thus robbed an inherited migraine of its terrors, although now ninety grains of bromide and forty minims of the deodorized tincture constitute the least effective dose.

A reference to standard therapeutic authorities would have shown Dr. Ross the incorrectness of the assertion (p. 307) that "bromide of potassium also appears to lower the irritability of the motor mechanism, while chloral acts more exclusively on the sensory mechanism."

The article on "Epilepsy" ought, according to our thinking, in another edition to be rewritten, so that idiopathic, reflex, and organic epilepsies may be clearly separated, since they are really distinct diseases, to be treated of separately and not confounded. We think there are few things more misleading than the statistics of epilepsy, because this jumbling together of distinct affections has been so common. The differential diagnosis between hystero-epilepsy and epilepsy (vol. ii. p. 916) is not at all borne out by our experience. Hysterical convulsions may be attended with complete loss of consciousness, and are not always, at least in America, preceded by an aura.

In concluding the notice of this very important work, we wish for it the success and development of many editions, and, as a Parthian blessing, call attention to the fact that no place has been found in its index either for apoplexy or brain-softening. We are very glad to note, as an indication of growth in honesty among our American publishers, that, although the title-page bears the impress of a New York firm, the book was printed in Manchester, where its wretched muslin covers indicate that it was also bound. The typography is unexceptionable, the proofreading most creditable. H. C. W.

GLEANINGS FROM EXCHANGES.

STATISTICS OF PORRO'S OPERATION.—At the last meeting of the British Medical Association, Clement Godson, M.D., read a very valuable paper before the Obstetrical Section upon Porro's operation, which he defined as a "Cæsarean section followed by removal of the uterus together with its appendages, including the ovaries, leaving only the cervical portion of the uterus." He stated that Joseph Cavallini, in 1768, observed that removal of the uterus could possibly be accomplished without danger to life; but G. P. Michaelis, of Marburg, in 1809, first suggested that the results of Cæsarean section might be improved by the extirpation of the uterus. Blundell, in 1828, recommended this operation, and by experiments upon rabbits proved that it might be safely performed. It was, however, to an American that the world owes the demonstration of the applicability of the operation to the human race. Dr. Horatio Storer, of Boston, after performing a Cæsarean operation, found that there was such serious hemorrhage caused by fibro-cystic tumor that he also removed the uterus. The patient had been three days in labor with a putrid fœtus *in utero*. She died sixty-eight hours after the operation. The first premeditated utero-ovarian operation in connection with Cæsarean section was performed by Prof. Porro, of Pavia, (now of Milan,) in 1876, by which he succeeded in saving the lives of both mother and child.

Dr. Godson gives the details of a successful operation performed by himself upon a dwarf whose pelvis had been crushed in childhood by a dray passing over her body. Without repeating the steps of the operation, it need only be stated that there were several upon which the lecturer laid especial stress. (1.) Preliminary passage of a catheter in order to empty the bladder and to indicate its exact location. (2.) Constricting the neck of the uterus by the hands of an assistant, so as to prevent hemorrhage, while the uterus is *in situ*, in preference to Müller's modification, which necessitates a much longer external incision (Müller's modification he recommends only where the uterine contents are putrid). (3.) The incision in the uterus he made transversely just above the junction of the body and neck of the uterus, making a small opening with the knife and enlarging it by tearing with the fingers. (4.) Extracting the child by the neck. (5.) Not removing the placenta. (6.) The treatment of the pedicle by fastening it in the lower angle of the wound by two long pins and Koeberle's serre-nœud. With strict Listerian precautions during the operation, drainage need not be provided for.

Accompanying the paper was a tabulated statement of one hundred and thirty-four cases, from different operators all over the world. Of these, thirteen had the pedicle treated by the intra-peritoneal method, of which three recovered and ten died. Of the remaining one hundred and twenty-one treated by the extra-peritoneal method, fifty-seven recovered and sixty-four died. Total mortality to mothers, seventy-four, or over fifty-five per cent. There were one hundred and eleven living children born, including two pairs of twins—one in Italy and one in Austria,—both of which lived.—*British Medical Journal*, January 26, 1884.

A CASE OF SUPPOSED DISLOCATION OF THE TENDON OF THE LONG HEAD OF THE BICEPS MUSCLE.—Dr. J. William White records (*American Journal of the Medical*

Sciences for January, 1884) a case of this very rare form of luxation, and reviews the history of the few other cases in which this accident is supposed to have occurred. The study of the literature of the cases recorded leads to the conclusion that although for more than a hundred years cases of supposed luxation of the tendon of the long head of the biceps muscle have been reported or alluded to by surgical writers, yet they have been so poorly observed or so carelessly described that they fail altogether to carry conviction, the one case (Soden's) which possesses any strong element of probability being itself open to reasonable doubt.

The symptoms in Dr. White's own case, which led him to the conviction that there had been true traumatic luxation of the bicipital tendon, may be enumerated as follows:

1. The recognition of the bicipital groove empty, which, if its existence be admitted, is pathognomonic. 2. Recognition of the tendon itself. 3. The inward rotation of the arm. 4. A slight depression under the tip of the acromion, a prominence of the shoulder in front, and a flattening behind. 5. Diminution in the vertical circumference of the shoulder. 6. Shortening of the arm as measured from the tip of the acromion to the external condyle. 7. Elevation of shoulder, tilting up of acromion, and elongation and narrowing of axilla when the arm was carried upwards. 8. The peculiar depression situated over the bicipital groove. 9. The line of ecchymosis following and strictly limited to the course of the biceps muscle. 10. A creak or "squeak" heard distinctly on carrying the elbow away from the side. 11. Flexion of the forearm on the arm was painful, the pain being sharp, lancinating, and felt at the front of the shoulder; flexion during supination was much more painful than flexion during pronation. 12. When extension of the forearm was attempted, a tense line along the edge of the biceps could be both felt and seen. 13. The pain felt over the joint was also felt along the line of the biceps as far as its insertion, and the patient still has a "drawing" sensation over that region. 14. The arm was preternaturally mobile for some time after the accident. 15. The position of the patient after the accident. 16. The character of the force producing the difficulty.

The rationale of these symptoms is very fully explained.

MALIGNANT PUSTULE FROM THE BITE OF A FLY.—A somewhat remarkable case of malignant pustule communicated by a fly is reported in the *Gazette des Hôpitaux*. The patient was bitten in the cheek by a large black fly, which he immediately killed. The bitten spot in a few hours began to itch violently, but no swelling appeared until the next day. When the patient entered the hospital the whole cheek was of a livid color and enormously swollen, especially over the malar bone, the centre of which region was occupied by a small, black phlyctæna, surrounded by a number of transparent vesicles. The eyelids were considerably swollen, and one of the submaxillary glands was enlarged and tender. There was no fever or other constitutional symptom. Dr. Moltière's treatment was prompt and energetic. He first completely destroyed the pustule by means of the thermo-cautery, and then injected the swollen parts, including the submaxillary gland, with a twenty-per-cent. solution of carbolic acid. The only internal remedy employed was alcohol, which was administered in enormous quantities without producing the slightest sign of intoxication. The affected surface began to slough off on the third day, and in another week was entirely detached. The healing process proceeded rapidly, and at the end of three weeks the patient was discharged. Blood and serum drawn from the vicinity of the pustule having been forwarded to an eminent expert for examination, he succeeded in detecting a few filaments of the *bacillus anthracis*, and a guinea-pig which was inoculated with the fluids died in a few hours with all the signs of specific gangrenous infection.—*Druggists Circular.*

CHOREA SIMULATED BY DISSEMINATED SCLEROSIS.—M. Marie (*Jour. de Méd. Prat.*, October, 1883) has collected fourteen cases of disseminated sclerosis in children, most of which were observed in England. The symptoms are the same as in adults, and may begin as early as the fourteenth month, but more frequently they do not appear before the third or fifth year. The disease is sometimes hereditary, but in other cases it follows some eruptive fever. It may be mistaken for hereditary tabes and chorea, but in the latter the involuntary movements persist during rest, and the muscles of the face, eye, and tongue are not affected.—*London Medical Record.*

TYNDALL ON EVOLUTION.—Professor Tyndall says on this subject, "If asked whether science has solved, or is in our day likely to solve, the problem of the universe, I must shake my head in doubt. Behind, above, and around us, the real mystery of the universe lies unsolved, and, as far as we are concerned, is incapable of solution. The problem of the connection of the body and the soul is as insoluble in its modern form as it was in the pre-scientific ages. There ought to be a clear distinction made between science in the state of hypothesis and science in the state of fact, and, inasmuch as it is still in its hypothetical stage, the ban of exclusion ought to fall upon the theory of evolution."—*Medical Journal.*

HYDROBROMIC ACID FOR EPILEPSY.—Dr. H. C. Wood believes that hydrobromic acid,

which is an efficient substitute for potassium bromide, has advantages over it in its pleasantness of administration and in its less liability to produce acne. Where it has failed in reported cases it is because it was given in insufficient doses as compared with the bromide salts. He gave, in a number of cases of inveterate epilepsy, doses increased up to an ounce of the officinal solution, three times a day, with good results,—even better than from the bromides themselves. One drachm of the officinal solution is equal only to about nine grains of potassium bromide. Even in large doses the acid agreed very well with a delicate stomach.—*Medical News.*

THE THERAPEUTIC EFFECT OF BOLDO LEAVES, imported from Chili, is claimed to be similar to that of coca. In the hospitals of Paris it has been used with perfect satisfaction in affections of the liver and in gall-stones. The drug is best administered in the form of a concentrated tincture or elixir that contains all the active principles.—*Répert. de Pharmacie.*

MISCELLANY.

MEDICAL SOCIETY OF THE STATE OF PENNSYLVANIA.—The thirty-fifth annual meeting will be held in Philadelphia on Wednesday, Thursday, and Friday, May 14, 15, and 16, 1884, commencing on Wednesday, May 14, at 9 A.M.

Amendment to be acted on.—By Dr. H. Leffmann: "No paper shall be read before this Society unless the same shall have been previously read, either in full or in abstract, before a County Society, and by it referred to the State Society."

Appointments for 1884.—To prepare address in Surgery, Dr. John B. Roberts, Philadelphia; to prepare address in Obstetrics, Dr. Jacob Price, West Chester; to prepare address in Hygiene, Dr. Benjamin Lee, Philadelphia; to prepare address in Mental Disorders, Dr. Alice Bennett, Norristown; to prepare address in Medicine, Dr. W. H. Daly, Pittsburg; to prepare address in Ophthalmology, Dr. William S. Little, Philadelphia.

Secretaries of County Medical Societies are earnestly requested to forward at once complete lists of their officers and members, giving post-office address of each.

Every delegate, before admission, shall produce a certificate of delegation, signed by the President or Secretary of his County Society.

Every permanent member (not a delegate), before admission, shall produce a certificate of good standing in his County Society.—(*Extract from Constitution.*)

WILLIAM B. ATKINSON, M.D.,
Permanent Secretary.

Railroads.—The Pennsylvania Railroad and its branches, and the Philadelphia and Reading Railroad and its branches, will issue excursion tickets at the rate of two cents a mile. All who desire to avail themselves of this should notify the Permanent Secretary, stating the number of excursion orders required, and the railroad over which the party must travel to the place of meeting.

THE WEIGHT OF THE HUMAN BRAIN.—The recent discussion about the weight of Turgenieff's brain (2012 grammes) has led to the publication of an article on the subject of the weight of brains by a Russian scientist, M. Nikiforoff, in the *Novosti.* According to him, the weight of the brain has no influence whatever on the mental faculties. The average weight of a man's brain is, according to Luschka, 1424 grammes, of a woman's 1272 grammes; Krause gives the averages as 1570 and 1350 respectively. The maximum weight is said to be 1600 grammes, and the minimum 800 grammes. The brain of the celebrated mineralogist Haussmann weighed 1206 grammes. It ought to be remembered that the significance of the weight of the brain should depend upon the proportion it bears to the dimensions of the whole body, and to the age of the individual. Byron died at the age of thirty-six, the great geometrician, Gauss, at seventy-eight years of age: the brains of the two should, therefore, not be compared. It is equally important to know what was the cause of death, for long disease or old age exhausts the brain. To define the real degree of development of the brain, it is, therefore, necessary to have a knowledge of the condition of the whole body; and, as this is usually lacking, the mere record of weights possesses little significance.

THE WOMEN'S MEDICAL COLLEGE OF PENNSYLVANIA held its thirty-second annual commencement at Association Hall, Philadelphia, at noon, March 13, 1884, at which the degree of M.D. was conferred upon twenty-six graduates, all of whom had studied for three years at the college, and some of them had taken a four years' course. The three years' graded course has been adopted at this institution, but the students are encouraged to take four years. A great improvement has been observed in the *personnel* of the classes since the adoption of the increased requirements for graduation and the lengthening of the course.

A reception was given at the college building in the evening, after the commencement, which was largely attended, when the "sweet girl-graduates with golden hair" received the congratulations of their friends. The college is in excellent condition, is well planned and ventilated, and is admirable in its appointments.

THE TRUMBULL COUNTY MEDICAL SOCIETY, of Ohio, has followed the plan of the Pennsylvania State Medical Society of appointing examiners to decide upon the fitness

of applicants for admission to the study of medicine, and has adopted its schedule of minimum requirements. Unfortunately, the profession is utterly powerless to enforce such a rule, unless the medical schools generally will agree not to accept students if unprovided with a certificate of fitness to study medicine from a county medical society. A few of the leading colleges may carry out such an arrangement; but, in that event, what should be the attitude of the profession to the other schools and their graduates?

A RARE BIRD.—It is reported that they have secured a genuine specimen of the *rara avis* known as an "allopathic" doctor in the city of Washington, and it has been proposed in Congress that the government shall erect a national university, with a million-dollar endowment, in order to give him a chair. It is expected that he will lecture during the winter, and travel with Barnum's great moral show during the summer, in company with the white elephant.

CHOLERA-BACILLUS.—Koch reports the finding of the same bacilli in the intestinal tract of cholera-patients in Calcutta that he found in Egypt, but has not yet demonstrated that they are peculiar to cholera, or that they are the only and efficient cause of the disease.

MEDICAL AID FUND OF THE AMERICAN MEDICAL ASSOCIATION.—Dr. Frederick Horner, of Virginia, strongly urges the wisdom and humanity of establishing a national medical aid fund by the Association.

NOTES AND QUERIES.

OBITUARY NOTICES.

DR. LUNSFORD P. YANDELL, of Louisville, Kentucky, died suddenly, from angina pectoris, at his home, on the 12th of March, at the age of forty-seven years. He was a graduate of the University of Louisville, where he was graduated in 1857; after the war he studied in Europe. He was physician to the City Hospital and Professor of Principles and Practice of Medicine in the medical department of the University of Louisville. He was senior editor of the *Louisville Medical News*, and a prominent member of the American Medical Association and of other scientific and medical organizations. Dr. Yandell was an able and pleasing lecturer, possessing a vigorous, incisive style both in writing and in speech. His numerous friends will sincerely mourn his untimely taking off. His death was regarded as a public calamity in Louisville, and his funeral was attended by a whole community.

DR. ALFRED L. ELMER died suddenly on the 15th of March, at his residence in Philadelphia, it is supposed from apoplexy, while taking a walk in his garden. He was eighty years of age, and was graduated at Harvard in 1823, and afterwards at the University of Pennsylvania. He never engaged in the practice of medicine, but he retained his interest in medical affairs to the last. His wife had died only a week before his death occurred.

DR. CASPER WISTAR, a graduate of the University of Pennsylvania of the class of 1826, died March 17, at his home in Philadelphia, at the age of seventy-nine years. He had been very successful in practice, and was one of the leading physicians of the city a generation ago, but he retired in 1871, on account of failing health. He had been a Fellow of the College of Physicians since 1848. He was a distinguished writer and lecturer, and was formerly Treasurer of the American Medical Association, of which he had been a member since 1852.

OFFICIAL LIST

OF CHANGES OF STATIONS AND DUTIES OF OFFICERS OF THE MEDICAL DEPARTMENT U.S. ARMY FROM MARCH 2, 1884, TO MARCH 15, 1884.

PERIN, GLOVER, LIEUTENANT-COLONEL AND SURGEON, Medical Director Department of Dakota.—Leave of absence extended twenty days. S. O. 23, Headquarters Division of the Missouri, March 5, 1884.

BILL, J. H., MAJOR AND SURGEON.—Granted leave of absence for one month. Paragraph 1, S. O. 20, Headquarters Department of the Platte, March 3, 1884.

BAILY, J. C., MAJOR AND SURGEON.—Granted leave of absence for one month, to take effect on or about March 1, 1884, with permission to apply to the Adjutant-General of the Army, through Division Headquarters, for an extension of three months. S. O. 24, Headquarters Department of Texas, February 26, 1884.

BACHE, DALLAS, MAJOR AND SURGEON.—Leave of absence extended seven days. Paragraph 1, S. O. 43, Headquarters Department of the East, March 5, 1884.

BILLINGS, JOHN S., MAJOR AND SURGEON.—Granted leave of absence for one month, with permission to go beyond sea, to take effect April 1, 1884. Paragraph 6, S. O. 61, A. G. O., March 13, 1884.

HEIZMANN, CHARLES L., CAPTAIN AND ASSISTANT-SURGEON.—Leave of absence extended three months. Paragraph 9, S. O. 57, A. G. O., March 8, 1884.

KNEEDLER, WILLIAM L., FIRST-LIEUTENANT AND ASSISTANT-SURGEON.—Assigned to temporary duty at Fort A. Lincoln, Dakota Territory. Paragraph 3, S. O. 26, Headquarters Department of Dakota, March 8, 1884.

FISHER, WALTER W. R., and POLHEMUS, ADRIAN S., FIRST-LIEUTENANTS AND ASSISTANT-SURGEONS.—Assigned to duty in Department of California.

STEPHENSON, WILLIAM, BORDEN, WILLIAM C., and CHAPIN, ALONZO R., FIRST-LIEUTENANTS AND ASSISTANT-SURGEONS.—Assigned to duty in Department of the Platte.

ROBERTSON, REUBEN L., and EDIE, GUY L., FIRST-LIEUTENANTS AND ASSISTANT-SURGEONS.—Assigned to duty in Department of Texas.

CROSBY, WILLIAM D., FIRST-LIEUTENANT AND ASSISTANT-SURGEON.—Assigned to duty in Department of Arizona.

GANDY, CHARLES M., FIRST-LIEUTENANT AND ASSISTANT-SURGEON.—Assigned to duty in Department of the East.

PILCHER, JAMES E., FIRST-LIEUTENANT AND ASSISTANT-SURGEON.—Assigned to duty in Department of Dakota.

Paragraph 4, S. O. 55, A. G. O., March 6, 1884.

STEPHENSON, WILLIAM, FIRST-LIEUTENANT AND ASSISTANT-SURGEON.—Ordered to Fort Niobrara, Nebraska, for temporary duty, on completion of which to return to his station, Fort Omaha, Nebraska. Paragraph 4, S. O. 20, Headquarters Department of the Platte, March 3, 1884.

FISHER, WALTER W. R., FIRST-LIEUTENANT AND ASSISTANT-SURGEON.—Assigned to duty at the Presidio of San Francisco, California, from 18th inst.

POLHEMUS, A. S., FIRST-LIEUTENANT AND ASSISTANT-SURGEON.—Assigned to duty at Fort Winfield Scott, California, from 18th inst.

S. O. 23, Paragraphs 1 and 2, Headquarters Department of California, February 21, 1884.

PHILLIPS, JOHN L., FIRST-LIEUTENANT AND ASSISTANT-SURGEON.—Assigned to temporary duty at Fort Warren, Massachusetts. Paragraph 2, S. O. 39, Headquarters Department of the East, February 28, 1884.

BENHAM, R. B., FIRST-LIEUTENANT AND ASSISTANT-SURGEON.—Relieved from duty at Fort A. Lincoln, Dakota Territory, and ordered to Fort Sisseton, Dakota Territory, for duty. Paragraph 1, S. O. 22, Headquarters Department of Dakota, February 26, 1884.

WALES, PHILIP G., appointed to be Assistant-Surgeon with the rank of First-Lieutenant, to date from February 7, 1884, vice Brewster, resigned. Memorandum, A. G. O., March 10, 1884.

LIST OF CHANGES IN THE MEDICAL CORPS OF THE NAVY FROM MARCH 1, 1884, TO MARCH 15, 1884.

P. A. Surgeon H. E. AMES, from the "Colorado" and ordered to the Greely Relief steamer "Bear."

P. O. Surgeon F. H. TERRILL, to Coast Survey steamer "Hassler."

P. A. Surgeon R. H. MCCARTHY, from the Coast Survey steamer "Hassler," and wait orders.